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EXPERIMENTAL LANGUAGE UNITS FOR GRADE FOUR

by



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A THESIS

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ABSTRACT

Many new studies in linguistics and language development are available to research workers in the elementary-school language curriculum. The purpose of the present study was (1) to use the research findings of these two areas in preparing a series of curriculum units designed to improve fourth-grade pupils' skill in substitution and expansion of nominals in order to make their speech and writing more specific and (2) to evaluate the effectiveness of these units by means of a controlled experiment.

The participants in this study were sixteen fourth-grade classes from ten schools of the Edmonton Separate School System. The curriculum units were taught in eight classes by the class teachers for a term of six weeks. For the same period the control group, consisting of the remaining eight classes, followed the regular program supplemented by additional material.

The data consisted of scores obtained from an analysis of compositions written as pretests and posttests and intelligence test scores. A random selection of the language samples of ten pupils for each class was subjected to two forms of analysis: (1) a weighted index ratio of vocabulary of nominals and (2) a weighted index ratio of modification of nominals.

The statistical analysis of the data using the multiple linear regression technique revealed no significant differences between the means of the experimental group and the control group in

either gain scores or adjusted posttest scores. On the basis of these findings it was concluded that language curriculum units such as those developed for this thesis, when limited to six weeks' instruction, are not effective devices for improving pupils' performance.

A brief qualitative analysis of the data from the experimental group suggested that:

1. Of the four ability groups identified on the basis of pretest modification scores, the top group did not improve their scores in the posttest whereas the remaining three groups, especially the high-average group, made considerable gains.
2. Although the curriculum units were designed to improve pupils' skill in using both single-word and word-group modifiers, most of the increase was due to the use of single-word modifiers.

While no conclusions could be derived from such an investigation, the qualitative analysis seemed to emphasize the need for developing language programs to suit the abilities of individual students.

The results of this study suggested that further language curriculum research be extended over a longer period of time and, if possible, be undertaken by a team of research workers. Since a qualitative analysis produced the most interesting findings of this study, more use of that type of analysis was recommended.

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CHAPTER I

INTRODUCTION

Language plays a central role in human development. Man uses language symbols to categorize and relate elements of his environment and to communicate his thoughts and feelings to others. There is a growing awareness of the influence of an individual's verbal behavior on his social and intellectual development. An efficient language code can facilitate growth; an inadequate one can impede it (Bernstein, 1967). The functioning of society also depends in large measure upon the effective communication of its members (Frick, 1950, p. 24).

Although most children have learned the fundamental structure of their native language by school age, their mastery of language is far from complete. There is, furthermore, a wide range of language competence among individual children. It becomes the responsibility of the school, then, to provide opportunities for each child to develop the verbal skills he needs to function fully as an intellectual and social being.

The elementary school has always been concerned with the language arts. Up to the present time, however, emphasis has been on the teaching of reading and writing. Carroll (1963, p. 145) writes:

Only in rare instances is it realized that the child needs training in speaking and listening as well--that the experience and training the child gets in the family and in his general social environment does not necessarily suffice in this respect.

In the light of new knowledge of the structure of language and

findings of child development studies, there is growing concern among educational theorists and practitioners that elementary school language programs are in need of revision (Hogan, 1965, pp. 16-27; Lane, 1967, p. 147; Weiss, 1963, p. iii).

Hogan (1965, p. 23) states:

The principal problem facing curriculum development in English is that research and theoretical developments have gone on so long in the absence of any effective means to bring these developments to the schools.

One way to bring the language curriculum in line with recent findings of linguistics and research in child development may be to use these studies in designing small instructional units for experimentation in the classroom. Taba (1962, p. 344) writes:

The gap between theory and practice may exist because the preoccupation with reshaping organizational schemes has not been paralleled by experimentation with curriculum as it functions in the teaching-learning situation.

I. STATEMENT OF THE PROBLEM

Research shows that by the time most children have reached school age, they have acquired and use all the basic sentence patterns of their language (Loban, 1963; Menyuk, 1961; O'Donnell, Griffin, & Norris, 1967). As children mature, their sentences increase in length. Length of response is an aspect of fluency. By increasing the number of words in their sentences, then, children gradually become more fluent in speech. Fluency is one of the characteristics of language competency. The significance of expanding sentences, however, lies not only in the

increased fluency but in the growth in other aspects of sentence maturity. Increased length is caused by substitution and expansion of sentence elements.

As children gain skill in replacing and expanding sentence elements, their speech becomes more flexible. Loban (1963, p. 84) identifies flexibility in varying structural elements as an important measure of language effectiveness. The substitution and expansion of the noun slot is one means of increasing sentence length and adding to effectiveness of expression. Replacements for the noun slot may be single-word nominals or complicated nominals, such as phrases or clauses. Nominals may be expanded by single-word or word-group modifiers. This strategy for increasing flexibility should provide for precise language. Nominals may be made more precise, firstly, by replacing inexact nominals by specific ones, and secondly, by adding modifiers.

If skill in substitution and expansion of nominals is one indication of language maturity, it seems possible that language development in this respect can be accelerated through classroom instruction. The chief value of this approach to language instruction, according to Hoppes (1934, p. 69), would be "to contribute to mental efficiency by keeping the development of the instrument of expression abreast of the requirements for expression." It is by examining succeeding developmental stages as described in studies of children's language that trends in growth can be anticipated and appropriate sequential learning experiences devised.

As children mature, they are able to perceive more and more

complex relationships between objects, events, and ideas. The expression of these relationships requires a language structure of increasing grammatical complexity. Research has illustrated that many fourth-grade children tend to express related ideas in writing by means of a series of short independent clauses punctuated by a period or coordinated by "and" or simply run together (Hunt, 1965, p. 87). By fifth or sixth grade there are notable increases in the use of subordinate structures in children's written language (Harrell, 1957, pp. 34-35; O'Donnell et al., 1967, pp. 50-53). Because their writing exhibits a lack of control over the grammatical devices necessary to express their ideas clearly, fourth-grade children, in particular, would benefit from the kind of instruction described.

There is a discrepancy between children's knowledge and use of language. Empirical studies show that children know more words than they use in speech or in writing (Bryan, 1953; Chase, 1937; Templin, 1957). Fear of error, Joos (1964, p. 210) suggests, inhibits children from experimenting in writing with the grammatical devices they use in speech. A desirable approach for instruction in written language might be, then, to build on the oral language skills children already possess.

Linguists emphasize that speech is primary and that writing is a secondary representation of speech (Gleason, 1965, p. 42; Fries, 1940, p. 6). Because spoken language is learned first and is more frequently used by most people, it seems logical that language instructional procedures should be patterned on natural development, in other words, oral instruction and practice followed by written practice.

Children learn the structure of their language intuitively by a process of inductive generalizations on the basis of varied linguistic experiences (Bruner, 1960, p. 8; Thomas, 1965, p. 6). Recent research substantiates the claim of transformational grammarians that children use the set of rules they have learned inductively to generate new sentences (Ervin and Miller, 1963, p. 120). In their natural language development, then, children do not merely imitate adult patterns but construct novel sentences by applying intuitively the generalizations or rules they have learned inductively.

The inductive learning of generalizations followed by application and practice would seem to be the most appropriate method for building language skills in elementary school. The advantages of using this type of instructional procedure are: (1) it leads to greater interest and involvement on the part of the learner; and (2) it enhances the possibility of transfer of learning, that is, the application of learning from one situation to the next (Kagan, 1966, pp. 158-9; Kersh, 1964, pp. 229-231).

Using the data from linguistics, language development studies, and the psychology of learning, a series of curriculum units could be developed and implemented in the classroom to improve performances in substitution and expansion of nominals in fourth-grade pupils' spoken and written language. The units could be designed to provide a structured sequence of learning experiences to develop fluency, flexibility, and precision of expression. For effective learning, the instructional procedures incorporated in the design would include building on the

language competency children already possess, moving from oral to written practice, and an inductive development of generalizations followed by application and practice. To determine the effectiveness of the curriculum units, it would be necessary to devise and apply evaluative techniques to measure the outcomes of the objectives in terms of pupil performance.

A project such as the one described, in attempting to translate theory into practice, is a preliminary step in language curriculum development.

II. PURPOSE OF THE STUDY

The purpose of this study was (1) to design a series of language curriculum units to improve the performance of fourth-grade pupils in substitution and expansion of nominals in speech and in writing and (2) to evaluate the effectiveness of the units as learning devices by means of a controlled experiment.

The curriculum units¹ which were developed have the following titles.

- Unit One: Substitution of Nouns (fluency)
- Unit Two: Making Nouns More Specific
- Unit Three: Expansion of Nouns: Fluency of Modification
- Unit Four: Single-Word Modifiers
- Unit Five: Word-Group Modifiers
- Unit Six: Written Application

¹The units prepared for this study were based on units designed by R. D. Armstrong, The University of Alberta.

III. DEFINITION OF TERMS

Curriculum units (or units). The experimental language units prepared by the researcher for this project were referred to as the curriculum units or the units.

Noun. Nouns were identified by two criteria, (1) inflectional morphemes, and (2) derivational morphemes.

1. Inflectional

- (a) The possessive morpheme (Example: boy's).
- or (b) The plural morpheme (Example: boys).
- or (c) Can take the plural morpheme in the same position, with or without a readjusted context to allow for a plural form (Example: The car runs well.- The cars run well.).

2. Derivational

Noun-forming derivational suffixes added to verbs, adjectives, nouns, and bound forms.

Examples:

arrive - arrival
 true - truth
 golf - golfer
 dent - dentist (Stageberg, 1965, p. 192).

Noun slot. Sentence positions characteristically but not necessarily occupied by nouns:

Subject of the verb.
 Subjective complement.
 Object of the verb.
 Object of a preposition.

Nominal. Any word, whatever its form class (noun, verb, comparable, pronoun, uninflected) was called a nominal if it occupied a noun slot. (Stageberg, 1965, pp. 196-197). For the purpose of this study,

pronouns and comparables were eliminated from the category of nominals.

Headword. In this study, headword referred to the nominal which was or could be modified by another word or a group of words (Stageberg, 1965, p. 163).

Modification. The insertion of a subordinate element, either before or after a word or structure, which affected the meaning of the word or structure in that it described, limited, intensified, and/or added to the meaning of it (Stageberg, 1965, p. 231).

Intelligence Quotient. Intelligence refers to mental ability. The intelligence quotient is the numerical expression of the ratio of an individual's mental age to his chronological age.

The intelligence quotients of the subjects of this study were the ratio scores derived from the results of the Alpha Otis Quick Scoring Mental Ability Test administered to the students in the school year 1966-1967.

IV. DESIGN OF THE EXPERIMENT

Procedure

Sixteen fourth-grade classes in a total of ten schools of the Edmonton Separate School System participated in this experiment. Two groups of classes were formed, and one of the groups was arbitrarily designated as the experimental group. The remaining eight classes comprised the control group.

The Sample

Written language samples were obtained from all the pupils

participating in the experiment. The data used for this investigation were selected from a random sampling of ten pupils per class, that is, 160 pupils. As each pupil wrote two pretest compositions and two posttest compositions, 640 written compositions were analyzed.

Analysis of the Data

Each written language sample was submitted to two forms of analysis:

1. Weighted index ratio of vocabulary of nominals based on Rinsland's word frequency list (Rinsland, 1945).
2. Weighted index ratio of modification of nominals.

The statistical analysis of the data for this study was made at the computing centre, Division of Educational Research Services, Faculty of Education, The University of Alberta. One-way analysis of variance and analysis of covariance were used to test the hypotheses. For the testing of Hypotheses I and II, a groups-within treatments design (Lindquist, 1953) was used. The experimental unit in this design is the class group. In testing the remaining hypotheses, the experimental unit was the subject.

In addition to the statistical treatment, a limited qualitative analysis of the data was attempted.

V. HYPOTHESES

In order to evaluate the effectiveness of the curriculum units,

the following null hypotheses were formulated:

Hypothesis I

There is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

Hypothesis II

When statistical adjustments are made for intelligence quotients, there is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

Hypothesis III

When statistical adjustments are made for initial differences in pretest scores, there is no significant difference between the means of treatment and control groups in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.
3. Total scores.

Hypothesis IV

When statistical adjustments are made for intelligence quotients and for initial differences in pretest scores, there is no significant difference between the means of treatment and control groups in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.

3. Total scores.

Hypothesis V

When statistical adjustments are made for initial differences in pretest scores, the best weighting of the posttest scores is not significantly better as a predictor of group membership than the total scores.

VI. LIMITATIONS

1. A major limitation of this study was the short duration of instruction. It is doubtful whether significant improvement in pupils' language can be effected by a six weeks' curriculum.
2. The curriculum units were designed to improve language skills in both speech and writing. However, because of the difficulty of collecting oral data from individual pupils of sixteen classes, only written language was measured.
3. As the experimental treatment extended to the middle of June, there was not sufficient time to measure retention of learning.
4. Another factor that could possibly bias the outcome of the study was that four classes of the control group began the experiment one week later than all the other classes. Participation of these classes in a music festival during the week scheduled for pretesting was the cause of the delay. Rather than diminish the size of the sample, it was decided to include these classes in the experiment. Their inclusion in the control group was accidental.
5. Lindquist (1953, pp. 172-174) recommends using a groups-within-

treatments design for experiments in which treatment is assigned to intact groups such as classes. In this type of design the experimental unit is the class. In employing the design for this experiment the number of cases was reduced from 160 to sixteen, thus lessening the possibility of statistical significance. To reduce the variance between class groups, and, thus, increase the possibility of statistical significance, only middle-class groupings were requested from the school board. A homogeneous sample of sixteen classes was not feasible, however, due to the restriction on the availability of schools in the Edmonton Separate School System, which accommodates a large number of researchers. Eight of the participating schools can be classified as representative of the middle-class population, while two schools are in districts which can be described as working class. Therefore, findings of this investigation may be generalized only to the middle and lower strata of the fourth-grade population of the Edmonton Separate School System.

6. When a statistical analysis revealed differences favoring the experimental group but too slight to be statistically significant when a groups-within-treatments experimental design was applied, a simple randomized design was assumed in which the subject was the unit of analysis. This statistical treatment is not recommended unless it can be shown that there are no real differences among the subpopulations in either the experimental or the control group (Lindquist, 1953, pp. 185-186).

VII. SIGNIFICANCE OF THE STUDY

It was hoped that the results of this experiment would illustrate that children's language development can be accelerated by means of structured learning experiences based on current research.

Should curriculum units such as these prove to be effective devices for improving fourth-grade pupils' performance in substitution and expansion of nominals in written compositions, perhaps similar units could be designed for other elementary grades covering a wider range of language experiences.

This study may suggest procedures for utilizing research and theoretical studies to develop a new language curriculum.

VIII. ORGANIZATION OF THE STUDY

In this chapter an attempt has been made to present a theoretical framework for the thesis. The chapter included an introduction, a statement of the problem, and a statement of the purpose. Also included are definitions of terms, an outline of the design, a statement of the hypotheses, a discussion of limitations, and a statement of the significance of the experiment.

The remainder of the thesis is organized as follows:

Chapter II: Review of Related Literature

Chapter III: Description of the Curriculum Units

Chapter IV: Design of the Experiment

Chapter V: Results and Analysis

Chapter VI: Summary, Conclusions, and Implications.

CHAPTER II

REVIEW OF RELATED LITERATURE

Curriculum development at any level is essentially an inductive process. Through an analysis and synthesis of a wide selection of data, theories are formulated and tested in the classroom. The data used in constructing the language curriculum units under investigation were drawn from the literature of three main sources: linguistics, children's language development, and the psychology of learning. The science of linguistics yielded an understanding of the nature, structure, and function of language. Children's language studies were particularly valuable in that they pointed out trends in children's language development enabling the formulation of a realistic and sequential set of objectives. Psychological studies contributing to knowledge of the learning process provided a useful resource in devising instructional procedures.

This chapter is divided into two parts. The first part discusses the structure and function of language in relation to the goals and instructional strategies of the curriculum units. The second part consists of a rationale for the objectives and instructional procedures of the curriculum units.

PART I

THE STRUCTURE AND FUNCTION OF LANGUAGE

Linguist Francis (1958, p. 13) defines language as "an arbitrary system of articulated sounds made use of by a group of humans as a means

of carrying on the affairs of their society."

Psycholinguist Carroll (1963, p. 10) provides a more extended definition:

A language is a structured system of arbitrary vocal sounds and sequence of sounds which is used, or can be used, in interpersonal communication by an aggregation of human beings, and which rather exhaustively catalogues the things, events, and processes in the human environment.

These definitions point to several features of language that must be considered in planning language instruction. They are: (1) the system or structure of language, (2) the primacy of speech, (3) the social function of language, and (4) the cognitive function of language.

LANGUAGE AS A SYSTEM

Linguists identify two levels of structure in language: (1) the phonological (or sound system) and (2) the grammatical (Francis, 1958, pp. 30-31; Gleason, 1965, pp. 103-104). Most linguists divide grammar into morphology, which deals with the structure of words, and syntax, which treats of the way in which words or groups of words are arranged to form sentences (Gleason, 1965, pp. 103-104; Stageberg, 1965, p. 3). Goodman (1963, p. 291) points out that most words have lexical or dictionary meanings, but it is the devices which signal the structural meaning that make communication possible.

Children's Systematic Development of Language

Ervin and Miller's (1963) synthesis of current research indicates that the development of language in young children is systematic and

that, at each stage of development toward an adult model of grammar, a child's language can be described as a system. Menyuk's (1961) investigation of the language of nursery-school children and first-grade children supports Ervin and Miller's conclusions. Recent studies of the language of elementary school children show that, although there are wide differences in the way individual children use language, there are definite trends in the development toward maturity of expression (Hunt, 1965; Loban, 1963; O'Donnell et al., 1967; Strickland, 1962). This suggests that even after children have acquired all the basic structural patterns, their language development continues to be sequential. This is an important consideration for language instruction.

II. THE PRIMACY OF SPEECH

Linguists emphasize the fact that speech is primary and writing is a secondary representation of speech (Fries, 1956, p. 6; Goodman, 1963, p. 291). Cassidy (1963) clarifies the linguists' position by referring to the earlier appearance of speech in the phylogenetic and ontogenetic development of man and the more frequent use of spoken language by all hearing people. Strang (1965, p. 37) maintains that there is empirical evidence that people spend seventy-five per cent of their communicative effort in speaking and listening and only twenty-five per cent in writing and reading.

The linguistic doctrine of the primacy of speech has implications for the language curriculum which are given weight by findings of research in children's language. In his longitudinal investigation of

children's language, Loban (1963, p. 88) found that superior writers among elementary school children were those most proficient in oral language. Burrows' (1965, pp. 16-17) research in children's writing has shown that all forms of written communication are improved when preceded by a series of oral activities. The strengthening and expanding of oral language skills before the development of the corresponding skills in writing seems to be a desirable procedure.

Comparison of Speech and Writing

There is a fundamental difference between spoken and written English, Gleason (1965, pp. 172-186) maintains. Spoken English uses a maximum number of structural signals to convey meaning. Written English uses a minimum of signals with much higher precision and efficiency. Structural signals peculiar to speech are intonation and stress. Replacing these two features of speech in writing, there are the graphic devices of punctuation, capitalization, and word division which in a limited way perform a similar function to intonation and stress in spoken language. Because punctuation is an inadequate replacement for intonation and stress, the possibility of ambiguity in written communication is greater than in speech. Precision and clarity of written language demands a tighter control of the grammatical structure of sentences.

Gleason's claim that immature writing follows closely the patterns of spoken English is substantiated by research in children's language (Harrell, 1957; Lull, 1929). Lull (1929, p. 76-77) found that the quality of writing of fourth-grade children was about equal to that of their

oral expression but from the second half of fifth grade upwards children's writing was superior to their speech. In his study, language was evaluated for content, grammar, and diction, essentially on the basis of subjective observations.

Harrell's (1957, pp. 40-46) study showed little difference in fourth-grade children's use of subordination in the two language modes.

O'Donnell et al. (1967, pp. 50-53) found that children in the third grade exhibited a weaker control of syntax in writing than in speech. Both Harrell and O'Donnell found, however, that by fifth grade, children's writing begins to exceed speech in structural complexity.

Gleason's description of language suggests that the difference in grammatical structure between the two modes is not necessarily a matter of quality but one of convention and style. If, generally, the written form of language is more highly structured than speech, it seems desirable that children of fourth grade be provided with opportunities to experiment with the more elaborate structures in both speech and writing to encourage precision and flexibility in spoken English and to facilitate the transition from speech to writing.

III. THE SOCIAL FUNCTION OF LANGUAGE

Linguists and educators emphasize the social function of language. Russell (1956, p. 25) maintains that language is a social process concerned mainly with communicating ideas or feelings to others.

"Language," according to Hall (1964, p.19) "forms the major link between the individual and society, and makes it possible for him to

live at the same time as an individual personality in himself and as a fully functioning member of his social group."

Frick (1950, p. 24) contends that the democratic way of life is dependent in large measure upon effective participation of all citizens. He argues that unless an individual possesses adequate communication skills he cannot participate fully in this kind of society.

May (1967, p. 16, p. 168) states that verbal communication is the one talent which is fundamental to nearly all occupations in our society. He writes, "The people who are most effective in their daily occupations are generally those who have learned how to communicate effectively--to interest, direct and understand others." May feels that elementary schools would have a much greater impact on oral language growth than they have had in the past if they designed specific instructional programs to develop fluent and articulate speech.

If language is a key to the social development of the individual and the progress of society, providing opportunities for each child to master the language skills he needs as an individual and as a participant in society should be a major concern of education.

IV. THE COGNITIVE FUNCTION OF LANGUAGE

The role of language in intellectual development has received much attention. Most of the literature in this respect deals with concept formation and development in young children.

Furth's (1966) studies of the deaf show that speech is not necessary for concept formation nor for many complex cognitive tasks.

Psychologists generally agree that language is not essential for intellectual development. They emphasize, however, that language has a facilitating effect on concept development, although the exact nature of this is not clear (Brown, 1956; Carroll, 1960; Inhelder & Piaget, 1964).

Inhelder and Piaget (1964, pp. 3-4) maintain that language accelerates the processes of classification and seriation and helps to complete them. Some of the most important concepts, like those of identity, similarity, comparison of magnitudes, spatial position, Carroll (1965, p. 111) claims are coded in the lexical and syntactical structure of the language. Brown (1956, p. 287) emphasizes the efficiency of language in the classification of social reality.

What is relevant to this investigation is not concept formation but intellectual growth made possible by increased use of concepts. For normal hearing children, language provides the major means by which concepts are manipulated. Piaget (1959, p. 45) writes:

The mere fact, then, of telling one's thought, of telling it to others, or of keeping silence and telling it only to oneself must be of enormous importance to the fundamental structure and functioning of thought in general, and of child logic in particular.

Vigotsky (1962, p. 50-51) contends that the child's intellectual growth is contingent on his mastering the social means of thought, that is, language. Vigotsky distinguishes inner speech and external speech. The former, he claims, evolves from a child's external speech, appearing simultaneously with the separation of the social and egocentric functions of speech. The speech structures, mastered by the child, although undergoing structural and functional changes, Vigotsky reasons, become the

basic structures of his thinking.

It is evident that language can facilitate intellectual development through the verbalizing of ideas either for oneself or for others, as Piaget implies. Vigotsky (1962, p. 126) states that the relation of thought to language is "a process, a continual movement back and forth from thought to word and from word to thought."

The facilitating role of language in cognitive growth has implications for education. Increased ability to understand and express more and more complex relationships between objects, events, and ideas seems to be determined, in a large measure, by the growing acquisition of language structures necessary for their expression. Subordinate clauses, prepositional phrases, and infinite verb forms are examples of such structures. The acceleration of language development might, then, be a worthwhile overall objective.

Hoppes (1934, p. 69) has outlined a particular function in language training for the elementary school to perform:

That function would be to anticipate the course of development in the use of language which will aid, at least not impede, the child in his thought. When the exact nature of the development of language ability is known, the forms peculiar to each stage can be placed sufficiently early in the school course to reduce appreciably, if not remove entirely, the intellectual handicap of a language instrument which is inferior to the function it is required to perform.

Hoppes wrote this over thirty years ago. Since that time there have been completed many research studies which yield information on the stages of children's language growth, providing valuable data for curriculum designers and teachers.

V. SUMMARY

This part of the present chapter has dealt with the structure and function of language. Structure was identified both in the system of language and in the systematic learning of it. The primacy of spoken language was discussed in relation to the curriculum. Then followed an analysis of the social and cognitive functions of language from which implications were drawn for the language curriculum.

PART II

CHILDREN'S LANGUAGE: LEARNING AND PERFORMANCE

This part of the chapter presents a review of the literature dealing with developmental stages in children's language and the learning of language. The design of the curriculum units is used as the organizational framework for the analysis of the studies. The first four sections are concerned with the development of objectives of the units, treating fluency, flexibility, substitution of nominals, and expansion of nominals in that order. The last two sections provide a rationale for the instructional procedures of building on children's skill in language and the inductive development of generalizations followed by application and practice.

I. FLUENCY

Increased Sentence Length

McCarthy (1954, p. 550) has presented a comprehensive review of the literature on children's language development. All of the developmental studies included in the review predate the widespread use of linguistic techniques of analysis; consequently, they lack the scientific basis of later linguistically oriented studies and are limited in the information they provide on children's language. One of the few definitive findings of these earlier studies was that length of oral response or length of written sentence increased with the maturity of the child.

Most of the investigations of oral language were done with pre-

school children. Davis and Templin studied the oral language of pre-school and primary school children. Both researchers found an increase in length of response with age (McCarthy, 1954, pp. 544-551).

McCarthy (1954, p. 551) reports a similar increase in length of sentence in the written language studied by Heider and Heider and Stormzand and O'Shea. According to the same reviewer, LaBrant considered the sentence an unreliable unit of analysis, especially for children's writing. Investigating, instead, clause length, LaBrant found that mean length of clause remained fairly constant in the writing of children in grades four to twelve. Because the ratio of subordinate clauses to coordinate clauses increased but clause length did not, LaBrant reasoned that any increase in sentence length at higher age levels is caused by the addition of subordinate clauses.

Harrell (1957, pp. 32-33) also measured clause length in his comparison of children's oral and written language. A slight overall increment in length of clause was found in the oral language of the children, who ranged in age from nine-and-a-half to fifteen-and-a-half years. The increase in clause length was greater when written language was considered. Harrell's findings suggest that the use of subordinate clauses is only one means of increasing sentence length.

Recent researchers in children's language have used analytical techniques derived from modern linguistics. These instruments enable a more detailed and objective analysis of language, from which, significant growth trends can be deduced and other useful inferences made. One of the most important advances has been the scientific method of segmenting

speech and written language into syntactic units, consisting of only one independent predication, thereby providing a unit that is more reliable than the sentence and that has more possibility for indicating growth pattern than either the sentence or the clause.

In the analysis of language samples for his longitudinal study of the language of elementary school children, Loban (1963, pp. 6-7) divided speech first into phonological units determined on the basis of the speaker's intonation pattern. Within these phonological segments, Loban then identified communication units, or syntactic units of only one independent predication. Included in this category are answers to questions that omit unnecessary repetition of question elements.

For his analysis of the compositions of children of grades four, eight, and twelve, Hunt (1965, pp. 20-22) divided written samples into minimal terminated units, or T-units, which contained only one grammatically independent predication, and are, consequently, comparable to Loban's communication units. This method was also used by O'Donnell et al. (1967, pp. 33-34) in their analysis of oral and written language.

Loban (1963, pp. 28-29) found a consistent increase in length of communication unit from year to year in his sample. For example, in fourth grade the children averaged 7.70 words per communication unit, in fifth grade they averaged 7.89 words, and in sixth the average was 8.38 words per communication unit. In addition to lengthening their communication units each year, the children also increased the number of words in their transcripts. The mean number of words tripled over the seven-year period. Correspondingly, the average of communication units

increased substantially during the study. It seems clear that as children mature they become more fluent.

Hunt (1965, pp. 22-23) noticed a steady increase in length of written T-units from grade to grade in his sample. The mean length of T-units were 8.6 for grade four, 11.5 for grade eight, and 14.4 for grade twelve. O'Donnell, et al. (1967, pp. 44-46) also noted an increment in average length of T-units from grade to grade for both language modes.

Perhaps the most interesting findings in Loban's (1963, pp. 29-32) study came as a result of a comparison of two subgroups of his sample, divided on the basis of general language competence. It was found that at every age level the high group exceeded the low group in the total number of words and the number and length of communication units. Hence, fluency is not only developmental; it is also qualitative.

Like Loban, O'Donnell et al. (1967, p. 43) reported that the mean number of words in total responses increased steadily in both speech and in writing. It seems evident that fluency in speech and in writing is both an index of language maturity and a characteristic of language competence.

Fluency before Control

"Words and readiness with them," writes Loban, (1963, p. 43) "are one part of power over language, but unless a speaker or writer imposes a purposeful order upon such fluency, his language is likely to be prolix drivel or chatter."

It may be, however, that fluency should be encouraged in children's speaking and writing as a preliminary step toward achieving control over

grammatical complexity. Joos (1964, p. 210) strongly recommends that teachers encourage children to experiment with grammatical transformations in their writing.

LaBrant (1934, p. 62) writes, "There is frequently a large gap between natural expression and the stilted performance which passes as school compositions. Constant attention to form and punctuation often causes the child to omit ideas when he is somewhat uncertain as to the accuracy of his expression."

The foregoing discussion would seem to support an objective of the curriculum units--the provision for the development of fluency prior to that of grammatical control at each major level of skill development.

II. FLEXIBILITY

The significance of increased sentence length as a measure of maturity is not simply in fluency but also in the features causing growth--substitution and expansion of sentence elements. Basic structural elements may be replaced and expanded by single words or word groups such as prepositional and verbal phrases and dependent clauses. Dexterity in this activity seems to be indicative of linguistic competence.

In her analysis of children's oral language samples, Strickland (1962, pp. 37-39) found that fifth-grade pupils used many more expanded and elaborated nominal constructions than did first-grade children.

When he examined informal written correspondence of adults from widespread geographical areas and educational backgrounds, Fries (1940, pp. 287-288) found conservatism and poverty of vocabulary and grammatical

expression characteristic of those with little education.

Loban (1963, p. 46) concluded that dexterity of substitution within basic structural patterns distinguished high and low language ability groups. "The important differences," he writes, "show up in the substitution of word groups for single words, in the choice and arrangement of movable syntactic elements, in variety of nominals, and in strategies with predication."

As the substitution and expansion of the noun slot is one of the factors responsible for increased sentence length, developing mastery of the skills involved would seem to be one way to increase language proficiency. Improving pupils' performance in substitution and expansion of nouns or nominals is the aim of the series of curriculum units designed by the investigator.

III. SUBSTITUTION OF NOMINALS

Two classes of substitutions are possible for the noun slot:

(1) single word replacements and (2) word group replacements. Word groups filling the noun slot may be prepositional phrases, verbal phrases or clauses (Stageberg, 1965, pp. 198-202).

Word-Group Nominals

Loban (1963, pp. 48-50) found that the more complicated nominals, such as verbals, infinitives, prepositional phrases, and clauses, were rarely used in the oral language of children in his sample and showed no growth pattern at this level of development. Loban did notice, however, that

the superior group used these nominal constructions much more often than the low group.

The study of O'Donnell et al. (1967, pp. 61-62) also showed no notable increases of use of non-headed nominals like noun clauses, infinitive phrases, and gerund phrases in children's oral language. In written compositions of children of grades three, five, and seven, however, O'Donnell et al. noticed a slight gain in frequency of use of infinitive and gerund phrases.

Hunt (1965, pp. 112-113) found that although they were used too infrequently to have a major effect on clause length, "near-clause" nominals increased from grade to grade, the largest increment having been found in grade twelve. Noun clauses, which were used frequently by fourth graders, were not considered indicative of maturity because in fourth grade a large proportion of these noun clauses were direct discourse, the use of which declined rapidly as children matured.

An examination of language development studies demonstrates that the more complicated nominals are rarely found in the speech of elementary school children. These constructions are a little more common in children's writing and show a slight increase in writing as children mature. The greatest advances in the use of complicated nominals are made after elementary school, as empirical studies seem to indicate. Frequent use of complicated nominals seems to be characteristic of mature language; it may be an indication of a level of abstractness of thought not common to many children of fourth grade.

Nominals are not necessarily made more specific by substituting

more complicated nominals. Consequently, for this reason and because they are rarely used at this level, complicated nominals were not emphasized as replacements in making nominals more specific in the curriculum units.

Making Nominals More Specific

Watts (1944, p. 29, pp. 78-80) suggests that children should be encouraged to speak and write vividly and interestingly. He writes,

In addition to learning to use words with some precision of meaning for intellectual purposes, every child has to learn to choose nicely among synonymous expressions when he needs the one which is best suited to the social situation in which he may find himself.

Pooley (1946, p. 188) shares Watts view that children have to be encouraged to be selective in their choice of vocabulary. Pooley says,

Unless spurred on to use the range of words that they know, children tend to employ a rather limited vocabulary in their speech and writing. The alert teacher will grasp every opportunity to encourage children to use less familiar words, and particularly to find the exact word needed to express a certain idea.

Flexibility of vocabulary usage would seem to be a characteristic of language competence. Loban (1963, pp. 35-41) investigated vocabulary development of children in his study by applying four measures of quantity and quality. The measures Loban used for this purpose were a vocabulary test derived from one devised by Watts, a teachers' rating scale, a frequency count, and a type-token ratio. In comparing the vocabulary of high and low ability groups in primary grades, Loban found that the superior group manifested the greater variety and exactness of vocabulary.

If speech can be made more specific and thus more effective by substituting specific nominals for inexact ones, then it should be possible to develop this skill in children of middle elementary grades. Making nouns more specific is one of the objectives of the curriculum units.

IV. EXPANSION OF NOMINALS

A second way nominals may be made more specific is by expansion, in other words, by adding modifiers. Stageberg (1965, pp. 206-207, pp. 235-254) classifies modifiers of nouns according to position, identifying prenominal and postnominal modifiers. He lists restricters, predeterminers, determiners, postdeterminers, adjectives and nouns as possible prenominal modifiers. The adjective position may be occupied by word adjectivals of the noun, verb, or uninflected word class. These are generally single-word modifiers.

Postnominal modifiers may be word adjectivals, phrase adjectivals (prepositional, participial, or infinitive), relative clause adjectivals, or appositive adjectivals according to Stageberg's (1965, pp. 246-254) classification. With the exception of some uninflected words as "upstairs" in "the apartment upstairs" postnominal modifiers are generally word groups.

Subordination

Most of the studies done before 1960 provide little detailed information regarding modification structures. Much attention was given

in these earlier studies to children's use of subordinate clauses.

Bear's (1939, pp. 312-315) analysis of children's written compositions revealed a steady increase of complex sentences throughout elementary school, an indication that children use more subordinate clauses as they mature.

Templin's (1957, p. 93) study of the oral language of children from ages three to eight showed that the use of subordination greatly increases over the five-year span. The least common of the subordinate clauses used was the adjective clause which, however, showed substantial increases from year to year.

Watts (1944, p. 123) study of children's essays showed that up to age eleven, the adjective clause was the least commonly used type, but after this age, the adjective clause appeared more frequently than clauses of reason or result.

Harrell's (1957, p. 34, pp. 49-52) investigation of the oral and written stories of children of ages $9\frac{1}{2}$, $11\frac{1}{2}$, $13\frac{1}{2}$, and $15\frac{1}{2}$ showed an increase of subordinate clauses with age comparable with the findings of LaBrant, Stormzand and O'Shea, and Heider and Heider. Harrell found that of the subordinate clauses, the adjective clause was used least often. In oral stories there was a steady increase in percentage of use of adjective clauses from one age level to the next. In written stories the increase of adjective clauses was more marked than the increase of noun or adverb clauses. Harrell found that the fourth-grade children in his sample showed little facility in the use of the adjective clause, but by tenth grade they were using it almost as frequently as the adverbial

clause. He attributes the difficulty and infrequency of use of the adjective clause by young children to the fact that this type of clause often interrupts the main clause and, thus, requires some thought and skill in writing.

Davis (1941, pp. 333-335) compared the position of subordinate clauses in the oral language of children of $5\frac{1}{2}$ years and $9\frac{1}{2}$ years. She found that six per cent of the relative clauses interrupted the main clause in the younger children's speech as compared with twelve and a half per cent for the older children. Davis concluded that the use of relative clauses in the position of interrupter is associated with a high level of linguistic development.

From the previously cited research, it can be concluded that the use of subordinate clauses is an index of language maturity. Adjective clauses seem to present the most difficulty for children up to about fifth grade. From fifth grade upwards, the adjective clause becomes increasingly more common. One reason for the slow development of the adjective clause is that it often interrupts the main clause, which reflects an interruption in the flow of the main idea of the sentence. Perhaps children of fourth grade could be guided to experiment with relative clauses first in the final position and then in the position of interrupter.

Single-Word and Word-Group Modifiers

The research of both Hunt and O'Donnell et al. yields detailed information on the development of a variety of modification structures

in children's language.

The study of O'Donnell et al. (1967, pp. 59-60) shows an overall increase in use of all of the various noun modifiers in the speech of children from kindergarten to grade seven, with the exception of the relative clause which appeared more frequently in the speech of the kindergarten group. In analyzing the written language of subjects from grades three, five, and seven, O'Donnell et al. noted an increase from grade to grade in the use of all noun modifiers except the rarely used infinitive phrase. In the writing of grade-five students, the most frequently used forms in order of frequency were the genitive, the noun-adjunct (which showed little growth), the adjective, the prepositional phrase, the relative clause, and the participle or participial phrase. In all the grades examined by the same researchers, single-word noun modifiers were more common than word-group modifiers in both speech and in writing.

O'Donnell et al. (1967, pp. 59-60) used techniques of transformational grammar for their analysis, identifying noun modifiers as "constructions formed by sentence-combining transformations." Although not directly specified in the study, determiners would be eliminated from the count of modifiers, for, according to the phrase structure rules of transformational grammar, the determiner is considered an essential part of the noun phrase (Gleason, 1965, p. 237; Roberts, 1964, pp. 9-18).

Hunt's (1965, pp. 101-109) investigation of the written compositions of children of grades four, eight, and twelve showed that adjectives were the most commonly used noun modifiers. These increased substantially from grade to grade, the more notable increase being from grade four

to grade eight. The next most commonly used form was the genitive (including both the inflected and the phrasal with "of"). The fourth-grade pupils used personal pronouns in the genitive more often than did pupils of higher grades. The use of "of" followed by a nominal increased heavily in upper grades. Next in order of frequency of use were prepositional phrases, verbals, and relative clauses. All these forms showed steady increases from grade to grade. Hunt defines adjectives as words that can be used as predicate adjectives, thus eliminating determiners from his count.

An interesting finding in Hunt's (1965, p. 99) study was that the expressions most frequently used as nominals by children of each grade were found to be either single-word nominals or nominals consisting of a single word plus an article, a proper name, or a pronoun.

The studies of O'Donnell et al. and Hunt illustrate that by about fourth grade, children have acquired many strategies for modification of nouns or nominals, and use them with increasing frequency as they mature. Adjectives and other single-word modifiers, it was found, are generally used more often than word-group modifiers throughout elementary school. On the other hand, it was also found that the expressions most often used as fillers for noun slots are single unmodified nouns and pronouns. No data on the development of the determiner were found in these studies. The research cited seems to justify the inclusion and sequencing of the objectives of (1) making nouns more specific by adding single-word modifiers and (2) making nouns more specific by adding word-group modifiers.

Other Single-Word Modifiers

Using Bloomfield's classification of adjectives which included three main classes, descriptive, limiting (determiners) and numeratives, Carroll (1939, pp. 215-229) endeavoured to discover developmental trends in the use of certain "determining and numerating adjectives". One hundred responses were collected from each child in three groups of children aged $2\frac{1}{2}$, $3\frac{1}{2}$, and $4\frac{1}{2}$. Carroll found that determiners (indefinites, demonstratives, and possessives) were much more commonly used than numerating adjectives (all, both, few, et cetera) but that both types of adjectives increased with age. Carroll also found that definite determiners (possessives and demonstratives) were used with far greater frequency than the indefinite (any, either, every, et cetera) but that the proportion of increase favored the indefinite adjective.

Because of the age of the subjects in Carroll's sample, his research is of questionable value to the present investigation. On the other hand, the infrequent use but steady development of both numeratives and indefinite determiners might be indicative of future trends. According to Stageberg's (1965, pp. 244-245) classification, numerating adjectives are either predeterminers or postdeterminers. On the assumptions that determiners continue to be developmental during elementary school, that determiners such as another, either, enough, neither, several, few, when added to nominals, can make speech more precise, and that fourth-grade children have difficulty using some of these terms, an objective of making nominals more specific by adding other single-word modifiers (determiners) seemed to merit inclusion in the curriculum units.

Combining Sentences

Watts (1944, p.124) found that older children use prepositional phrases and infinitives as alternatives to dependent clauses. This tendency to compression, he claims, is a mark of maturity in children's written language.

Loban (1963, p. 41) contends that infinitives, participial phrases, appositives, and other such devices can contribute to compactness and effectiveness of speech.

Hunt (1965, p. 88) noted that fourth-grade children wrote numerous short single-clause T-units with "and" or punctuation, or run together. These children, he claims, miss opportunities for consolidating the T-units through subordination. For example, the two sentences: "Moby Dick was a very big whale. He lived in the sea." could be written as one sentence with the second sentence becoming a subordinate clause: "Moby Dick was a very big whale who lived in the sea."

For fourth-grade children, instruction and practice in consolidating one-clause sentences by reducing some to subordinate clauses, phrases, or single words might be a worthwhile activity to help them develop compact and effective speech. Consequently, the objective of encouraging effective use of modifiers by combining sentences was included in the curriculum units.

V. BUILDING ON CHILDREN'S KNOWLEDGE OF LANGUAGE

Wilson (1964, p. 75) presents a detailed exposition of a six-year-old child's knowledge of language.

When he enters school, . . . , a child already knows, in an operational sense, that language has pattern, that language is arbitrary, that language changes, and that language has variety. He knows that it contains methods for changing a word from singular to plural, for increasing intensity, for changing tense, and for changing one kind of word into another kind of word. Although he lacks a technical vocabulary, he knows a good deal about syntax, about usage, about inflection, about comparison, and about derivational processes.

Wilson recommends finding ways of making children aware of their knowledge of language.

In writing of primary language instruction, Burrows (1965, p. 19) admonishes, "To extend, refine, and enhance the oral arts and skills children already possess is the first obligation."

Linguist Joos (1964, p. 210) comments on the teaching of composition. He writes,

Your aim should be to make the child's own resources available to him. He comes to you able, apparently, only to write simple sentences eight to twelve words long. He is afraid to write the long compound sentences which he can and does use lavishly in conversation, because he has been regularly condemned for comma faults, . . .

Building on the language skills children already possess, in many cases, might mean making children aware of their knowledge of language and stimulating its use as Joos suggests. Empirical studies also reveal the discrepancy between children's knowledge and use of language.

In an effort to learn more about the adjectives at the command of fourth, fifth, and sixth-grade pupils at Washington School, Springfield, Massachusetts, Chase (1937, pp. 11-16) read thirty-five nouns to them, one at a time, asking pupils to write a number of adjectives to describe the nouns. Three hundred and seventy-eight different adjectives were

listed by the 227 pupils in the study. On counting the number of adjectives used by the pupils in writing descriptions, Chase found that the pupils had not used the adjectives they knew. She also noted a tendency to overuse adjectives such as "pretty" and "nice".

Bryan (1953, pp. 210-215) conducted a series of combined free-association and stimulus-response vocabulary tests with children of grades two to six in several widely separated communities of the United States, in areas representative of a variety of social classes. His purpose was to test the hypothesis that children's vocabularies have been underestimated because they have been developed from single time situations, limited geographical areas, and single response situations. Bryan's investigation revealed that the children wrote 9,469 different words as compared with 6,733 different words reported in the Buckingham and Dolch free-association study. A conclusion from Bryan's research that is of interest to this study is that "children reveal a knowledge of more words if external stimuli to recall are either provided or taken advantage of."

The research of Chase and Bryan shows that children know more words than they use and must be stimulated to use the vocabulary at their command. These conclusions support Pooley's (1946, p. 188) contention that unless children are encouraged to use the words they know, they tend to employ a limited vocabulary in their writing.

The admonitions of linguists, given weight by empirical studies, strongly suggest that the most effective way to improve children's language behavior is to make children aware of the skills they already have

by encouraging them to use what they know, be it vocabulary or grammatical devices. In this way children can be guided to experiment with more and more mature language forms, which should result in greater flexibility and control of both spoken and written language.

VI. INDUCTIVE DEVELOPMENT OF GENERALIZATION

Children's Language Learning

Many verbal learning theories have been advanced in the past thirty or forty years. Most of these theories have been developed by psychologists of the behaviorist tradition (Jenkins, 1967). Behaviorists attempt to explain human language learning by extrapolation from experimental investigation of animal behavior, as Miller (1967, pp. 339-340) points out. Consequently, language learning, so conceived, is essentially habit formation based on imitation of words or combinations of words and strengthened by reward or reinforcement (Chomsky, 1967; Miller, 1967).

Miller (1967, pp. 345-346) criticizes the behaviorist theories for, among other things, ignoring the syntactic structure of sentences and what Miller calls "the large innate capacity humans have for acquiring articulate speech."

These theories, Chomsky (1967, p. 339) claims, in disregarding the contribution of the child to language learning, permit "only a superficial account of language acquisition, with a vast unanalyzed contribution attributed to a step called 'generalization'."

Both transformational grammarian Chomsky (1967, p. 335) and Miller (1967, p. 345) argue the impossibility of a child's learning by imitation

all the sentences he speaks.

Theories of transformationalists. Miller (1967, p. 342) writes,

Only on the assumption that a language user knows a generative system of rules for producing and interpreting sentences can we hope to account for the unlimited combinatorial productivity of natural language.

Thomas (1965, p. 6) claims that by five or six years of age a child has "constructed a grammar of his language that permits him to produce thousands of sentences that he has never, in fact, heard." He accomplishes this, states Thomas, by making generalizations about language on the basis of various kinds of linguistic experiences. Psychologist Bruner's (1960) views on children's language learning concur with those of the transformational grammarians.

Research in language learning of young children. Ervin and Miller's (1963, pp. 119-122) analysis of current research in children's language learning adds support to the logical proposals of linguists regarding children's acquisition of language. "It is possible," they write, "that the regularities in early sentences merely reflect memorization of sequential probabilities in adult speech. Only novel sentences can show this is not the case."

According to Ervin and Miller's report, children's first sentences composed of one or two words appear to be "telegraphic" versions of adult sentences. "Where's the ball?" becomes "Where ball?". "That's the ball" becomes "That ball". From sentences such as these it is reasoned that the child creates new sentences by a process of coding

words into classes. Function words or high frequency items like "where", "that", and "all gone" occurring in fixed positions seem to serve as operators identifying a class. The remainder of the child's vocabulary forms one undifferentiated class. If "where" or "that" are used to identify a class, the child can generate new sentences: "Where dolly?" and "Where mommy?". By a similar process the remainder of the vocabulary is soon divided into distinct classes.

The tendency of four-year-old children to substitute regular forms for irregular ones, for example, "buyed" for "bought" and "childs" for "children" is a further indication that children do not simply repeat memorized grammatical sequences but actually construct sentences by applying a set of rules which they have intuitively induced (Menyuk, 1961, p. 52; Ervin & Miller, 1963, p. 125).

If, in the natural process, language is acquired by application of inductively developed rules or generalizations, then, logically, this strategy should be used in developing language skills in elementary school.

Inductive Learning

In recent years there has been an emphasis on learning the structure of the disciplines, beginning in elementary school (Bruner, 1960). Consequently, considerable attention has been given by researchers and educators to the learning of general principles or generalizations by the "discovery" or "inductive" method and the application of these principles or generalizations to new situations, generally termed

"transfer of learning".

Kersh (1964, p. 229) conducted an experiment in which a group of students was required to discover mathematical rules independently while a second group was taught the rules directly. While many students of the first group failed to discover the more complex rule during the time allotted, when the groups were retested about a month later, the students who had discovered the rules remembered them better than the students who had been given the rules.

One of the benefits of the discovery approach to learning, according to Kagan (1966, p. 158) and Kersh (1964, p. 230) is that it stimulates greater interest or involvement in the task on the part of the learner. Kagan (1966, p. 159) points out, however, that many children, generally of lower intelligence, do not have the initial motivation to make the required inferences.

Transfer of learning. The research of Haslerud and Meyers (1963, p. 148) has illustrated that independently derived principles are more transferable than those where the principle is given to the student. Stephens (1963, p. 117) suggests that when the amount of transfer hinges on the mastery of a general rule, formulation of the generalization by the students is best.

Practice in applying generalizations. Kersh (1964, p. 229) contends, however, that a student learns to apply a specific principle effectively only if he practices making the application.

Taba (1962, p. 125) emphasizes that the actuality of transfer

depends on the extent to which the curriculum stimulates the discovery of basic principles, gives practice in applying principles, and develops an expectation that what is learned will be used in new and different ways.

Kersh (1964, p. 231) concluded from his investigation that guided discovery is an effective teaching method. When the discovery of generalizations is guided by the teacher, the method combines the efficiency of directed teaching with the benefits of independent discovery.

The studies referred to in this subsection illustrate the advantages of using inductive procedures when generalizations are to be learned and applied to new situations. The nature of language learning suggests that this approach would be particularly suited to the increasing of linguistic competency.

The emphasis upon providing practice to ensure transfer of learning is also relevant to this investigation. The oral and written language skills developed by students are used in a wide range of social situations.

For effective learning of language skills, the instructional procedures of each of the curriculum units provide for inductive development of generalization, guided by the teacher, but formulated by the pupils, followed by oral and written practice in applying the generalization.

Although children of lower intelligence might have difficulty making generalizations, the possibility of the interest and involvement of the students in the learning task when an inductive method is used

might help to offset this problem. The intelligence variable could, however, be a contributing factor in learning by induction.

VII. SUMMARY

In the second part of Chapter II the design of the curriculum units under investigation provided the model for the review of related studies. By a process of logical deductions, the findings and conclusions of the research and theoretical studies were related to specific features of the curriculum units and provided a justification for their inclusion.

The whole of Chapter II presented an analysis and synthesis of the data from linguistics, children's language development, and the psychology of learning, from which evolved the general and specific objectives of the curriculum units and the instructional procedures used in developing the units.

CHAPTER III

DESCRIPTION OF THE CURRICULUM UNITS

In preparing the curriculum units for this study the researcher used a methodological approach and format adapted from language units developed by Dr. Robert D. Armstrong of the University of Alberta.

This chapter presents a description of the curriculum units. First, the general approach, the format, and the methodology of the units are discussed. Then a brief description of the individual units follows. Included in that description are the specific objectives of each of the units and an outline of instructional procedures.

I. GENERAL APPROACH TO INSTRUCTIONAL PROCEDURES

The series of language curriculum units consists of six units, the first five of which are instructional and the sixth, a written application and practice of the skills developed in the preceding units. Each unit consists of three or four one-half hour lessons. Units One, Two, and Three each contain three lessons; Units Four and Five are each composed of four lessons. Unit Six contains three periods of writing practice.

Research has illustrated the discrepancy between children's knowledge and use of language and the need for encouraging them to use the vocabulary and grammatical structures in their repertoire. In each lesson of the curriculum units, an effort has been made to build on the

language skills children already have by eliciting from them descriptive details in the form of adjectives and other noun modifiers at their command. As children's language development is cumulative, throughout the units the pupils are reminded to continue practising skills developed earlier.

No attempt is made in the units to teach vocabulary to the children, to impose more mature grammatical structures on them, or to teach grammatical rules directly. Only a few grammatical terms need to be used--"noun", "modifier", and perhaps "adjective".

In the curriculum units, the word "nominal" is not used. Although many children use other parts of speech as nominals, the majority of the words they use as headwords in the noun slot are nouns or pronouns. Hence, the term "noun" was used for instructional purposes. However, the more inclusive term "nominal" is preferred in this exposition.

The analysis of related studies in Chapter II has indicated that an inductive development of generalization followed by application and practice is the most effective method for language instruction. In each of the units that procedure is followed.

The first three units are structured as follows:

Period One: Inductive development of generalization.

Period Two: Deductive application of generalization.

Period Three: Written practice.

Units Four and Five each consist of two parts, each part containing two lessons:

Period One: Inductive development of generalization.

Period Two: Oral and written application of generalization.

Studies of children's language have emphasized the advantage of building children's oral language competence at each level of skill advancement before attempting to develop the corresponding skills in writing. This was considered important in designing the curriculum units. In the first three units, Periods One and Two are completely oral. Period Three consists of written practice. For Units Four and Five, the lessons devoted to inductive development of generalization are completely oral. The lessons concerned with deductive application of generalization move from oral to written practice.

II. UNIT ONE: SUBSTITUTION OF NOUNS

Fluency is a characteristic of effective speech, but it also seems to be a preliminary step in acquiring control of grammatical devices in children's language development. Consequently, fluency in substitution of nouns was considered a desirable objective for Unit One.

An outline of the instructional procedures used in each lesson of Unit One is now presented.

Period One

The pupils are presented with a number of predicates, one at a time, for which they are required to supply as many subjects as they can think of. For example, "chased the squirrels" may elicit as subjects "the boys", "a cat", and many others.

Then the pupils are shown several sentences in which one or more

nouns have been underlined. The pupils are asked to replace the underlined nouns with as many suitable nouns as possible. For Unit One, the replacements need not be synonymous.

After a reasonable number of substitutions have been suggested, the pupils are then asked to make a general statement concerning what they have learned about varying the nouns in their sentences. At this stage, the pupils may have difficulty in formulating a generalization and may require guidance in the form of questions by the teacher.

Period Two

Pupils are first asked to recall their learning of the previous period. The pupils then apply the generalization to new situations by replacing underlined words in several sentences with as many substitutes as they can think of. As a further step in skill development, in the last sentence pupils are required to identify the nouns for which substitution must be made. Finally, the children are asked to discuss their sentences, that is, the differences that have been made through substitution of nouns. Sentence examples are provided in the curriculum units, but pupils are encouraged to use their own sentences for the activities suggested in these lessons.

Period Three

The third period is intended to provide written practice in applying the generalization developed in the first period, and first applied in the second period. The pupils are presented with a series of written sentences and are asked to write each of the sentences three times, each

time substituting a different noun for the underlined nouns and, in the last sentence, nouns which they must identify first. The individual written work in this lesson is preceded by oral group work with the first example.

III. UNIT TWO: MAKING NOUNS MORE SPECIFIC

Unit Two is similar in format to Unit One. The generalization to be developed inductively is that sentences can be improved by substituting more specific nouns. In this unit the pupils are required to think of nouns that are synonymous with the nouns in the original sentences rather than just finding any suitable replacement. Again, pupils are encouraged to offer their own sentences as examples for this activity.

IV. UNIT THREE: EXPANSION OF NOUNS - FLUENCY OF MODIFICATION

In this unit the format is essentially the same as for Units One and Two, although the activity changes. The generalizations to be developed inductively are that (1) nouns can be made more specific by modifying them with single words and word groups and (2) single-word modifiers are generally placed before the noun and word-group modifiers after the noun. As Unit Three introduces expansion of nouns, emphasis has been placed on developing fluency.

Period One

The teacher presents one of the sentences used in a previous unit.

In order for the pupils to become aware of the continuity between substitution and expansion of nouns in making speech more specific, pupils are reminded, first, to replace the underlined noun by a more specific noun. The next step requires pupils to suggest as many details as they can think of to add to the picture of the noun referent. Then, details in the form of single words and word groups are inserted into the sentence, first, one at a time, and, then, a number at a time. The same procedure is followed with several sentences. The pupils are, then, guided to formulate an appropriate generalization.

Periods Two and Three

Periods Two and Three are similar in format to the corresponding periods in Units One and Two.

V. UNIT FOUR: SINGLE-WORD MODIFIERS

This unit consists of two parts: (1) development of the use of adjectives, and (2) development of certain determiners, especially numeratives, such as, several, a few, many, and indefinite words, such as, either and neither. As children use single-word modifiers much more regularly than they do word-group modifiers, it was decided to place a unit developing the use of these forms before one treating word-group modifiers.

In Unit Four there are four lessons, two lessons for each part. The first lesson of each part is an oral development of generalization and the second lesson of each part consists of a combined oral and writ-

ten application of generalization.

Period One

The objective of Part One is to make nouns more specific by adding adjectives. The format of the first period is essentially the same as for Period One of Unit Three. In experimenting with several adjectives as modifiers of the one noun, it was left to the pupils to arrange the order of the different adjectives intuitively.

Period Two

Period Two is divided into two parts. The first part is an oral application of the generalization developed in the first period. In the oral application, pupils are asked to experiment with various combinations of adjectives. For the written part, the pupils are shown a picture and are asked to write a sentence describing the object of the picture. After the sentence is written, the picture is again displayed and the pupils look for more details. The pupils are then required to rewrite the sentence, including the additional details.

Period Three

In this lesson the objective is to make nouns more specific by adding other single-word modifiers, such as numerating and indefinite determiners. Although there is a similar inductive learning of generalization the format is slightly different from that of Period One. In Period Three the teacher uses concrete material to elicit the various determiners.

Period Four

As in Period Two of this unit, this lesson combines oral and written application of generalization. The oral application requires pupils to substitute more precise nouns and, then, to add precision by inserting modifiers. The examples are designed to elicit determiners as well as adjectives. For the written part of this lesson, a situation is presented to the pupils which should also elicit both kinds of single-word modifiers. The pupils are asked to write three sentences suggested by the situation.

VI. UNIT FIVE: WORD-GROUP MODIFIERS

Like Unit Four, this unit has two parts, each containing two lessons. Part One develops the use of word-group modifiers and Part Two deals with combining sentences.

Period One

The objective of Part One is to improve pupils' performance in making nouns more specific by adding word-group modifiers. Attention is given to placing these modifiers after, but as close as possible to, the nouns they modify. In the first lesson, pupils are presented with sentences and are asked to supply as many details as they can think of to make one of the nouns more specific. Hence, the pupils are encouraged to experiment with both single-word and word-group modifiers, using as many different combinations as they can think of. The emphasis, however, is on developing skill in using word-group modifiers.

The research of Hoppes showed that children often misplace modifiers. In this lesson when misplaced modifiers are used, the procedure is to have pupils examine the structure and think of whether the sentence expresses the meaning they intended.

Hoppes (1934, p. 70) writes:

Exercises in comparing the meaning of statements with modifiers in various positions in the sentence should cultivate critical appreciation of the function of modifiers and the significance of their position in relation to the words they modify.

Period Two

The deductive application in this lesson consists of the writing of a personal description. The writing is preceded by an oral discussion of the ideas and details that could be included, and group practice in expanding a sentence of the pupils' own composition using skills developed in the previous lesson. After the children have written a first draft of their descriptions they are encouraged to apply what they have learned in rewriting their drafts.

Period Three

The objective of Part Two is to develop the generalization that sometimes sentences can be combined by reducing some of the sentences to subordinate structures. In this way, related ideas can be expressed more effectively. It has been seen that fourth-grade children often express what seems to be related ideas in a series of short communication units instead of using subordinate structures. The learning experiences offered in this lesson should be beneficial to fourth-grade children

especially. Several series of three or four related sentences are presented to the pupils. The pupils are required to experiment with a number of ways of combining the sentences and express an appropriate generalization.

Period Four

This lesson consists of two related parts. The first part is an oral practice combining sentences using the same procedure as in the previous lesson. There is a progression of difficulty in this activity. For the first exercise, two of the three sentences can be reduced to subordinate structures modifying one noun. In the remaining exercises the four sentences, when combined, require the modification of two different nouns.

For the written practice, the pupils are presented with a paragraph containing short communication units, either separated by a period or the conjunction "and". The pupils are asked to rewrite the paragraph, combining as many of the sentences as they can without altering the essential meaning of the paragraph.

VII. UNIT SIX: WRITTEN APPLICATION

Unit Six provides a synthesis in writing of the learning of the previous five units. Throughout the units, the procedure is to improve pupils' oral and written expression by encouraging them to experiment with the vocabulary and grammatical structures they know but often do not use. For the written practice, pupils are presented with situations

motivating them to include sufficient details by using the modification structures they know.

VIII. SUMMARY

In this chapter an effort was made to describe the curriculum units and to relate the objectives and instructional procedures to the analysis of related literature in Chapter II. Copies of the curriculum units are included in Appendix A.

CHAPTER IV

DESIGN OF THE EXPERIMENT

In this chapter the experimental design is described under the following headings: the sample, instructional and testing procedures, description of the language samples, analysis of the language samples, intelligence quotients, statistical treatment of the data, and qualitative analysis.

I. THE SAMPLE

To decrease the variance between class groups and thus increase the possibility of statistical significance of the outcomes of this experiment, middle class groupings of students were requested by the researcher. Such a homogeneous sample was not feasible because of school board regulations. Of the ten schools involved in the study eight were in districts that may be described as middle class and two were in districts where the population was predominately working class.

Fifteen teachers of fourth-grade classes in ten schools of the Edmonton Separate School System were asked to take part in this experiment. All agreed to participate. As one of the teachers was responsible for teaching language in two classes, the actual number of fourth-grade classes in the study was sixteen.

Selection of Experimental and Control Groups

Because of the uneven distribution of classes in the schools

involved in the study, a random assignment of individual schools or classes to the experimental group was impossible. Two groups of five schools were arbitrarily formed, each group consisting of eight fourth-grade classes. The groups were designated as experimental or control on a random basis.

In the experimental group there were one school with three fourth-grade classes, one school with two, and three schools with one fourth-grade class each. The control group consisted of three schools with two fourth-grade classes each and two schools with one fourth-grade class each. Table I shows the distribution of classes in both the experimental and the control groups.

TABLE I

DISTRIBUTION OF CLASSES IN THE EXPERIMENTAL AND CONTROL GROUPS

EXPERIMENTAL GROUP		CONTROL GROUP	
Number of Schools	Number of Classes	Number of Schools	Number of Classes
1	3	1	2
1	2	1	2
1	1	1	2
1	1	1	1
1	1	1	1
Totals	5	8	8

Selection of the Data

For purposes of identification numbers were assigned to schools, class groups, and individual pupils participating in the experiment. Using a table of random numbers, ten pupils from each class were selected and the language samples from these individuals were analyzed. Hence, the sample consisted of 160 children.

II. INSTRUCTIONAL AND TESTING PROCEDURES

The Experimental Program

The experiment lasted for eight weeks in the schools. During the week beginning Monday, April 22, 1968, the students wrote two pre-test compositions. Six weeks of instruction followed. The study concluded in the schools with the writing of two posttest compositions during the week of June 10, 1968. Four classes began the experiment one week late and, consequently, completed it during the week of June 17, 1968.

Administration of Pretests and Posttests

Pretest and posttest compositions were written by the subjects on days specified by the researcher. Each teacher participating in the study was provided with a set of printed instructions for conducting the tests (See Appendix B.).

Treatments

The Experimental Group. Treatment for the experimental group

consisted of the learning experiences provided by the curriculum units prepared by the researcher. Each teacher in this group taught her class one unit each week for six weeks.

The Control Group. The teachers of the control group were asked to continue teaching the regular program supplemented with instructional material provided by the researcher. This material consisted of vocabulary exercises to develop extended word meanings and a unit teaching punctuation through intonation. These instructional devices were not designed to emphasize the skills developed with the experimental group.

The Hawthorne Effect

The purpose of the supplemental activities for the control group was to create the same experimental climate in the control group as in the experimental group, and, hence, to minimize the Hawthorne effect, that is, any influence the experimental procedure itself might have in increasing posttest scores (Travers, 1958, p. 444).

Cook (1962, p. 118) defines the Hawthorne effect as follows:

. . . a phenomenon characterized by an awareness on the part of the subjects of special treatment created by artificial experimental conditions. This awareness becomes confounded with the independent variable under study with a subsequent facilitating effect on the dependent variable, thus leading to ambiguous results.

To eliminate the experimental effect, according to Travers as reported by Cook (1962, pp. 121-122), equal attention must be paid to students and teachers in both treatment and control groups. MacDonald (1965,

p. 100) feels that teachers of control groups should believe that they are working with experimental groups.

Every effort was made to equalize the two groups (experimental and control) in this study to insure that any systematic difference in the groups would be due only to the experimental treatment. The following precautions were taken:

1. Treatment was assigned to both groups.
2. Teachers of the control group were not informed that they were not working with the experimental group.
3. In-service sessions of equal length were held with both groups of teachers.
4. Visits were made by the researcher to all the schools participating in the study during the course of the experiment.

In-Service Meetings

Prior to beginning the experiment an in-service session of one hour was held with each of the two groups of teachers involved. For the experimental group the meeting consisted of the distribution of instructional material, a brief presentation of the theoretical background of the curriculum units, a discussion of the objectives, a clarification of content and methods, and suggestions for instructional procedures. The in-service session for the control group consisted of a discussion of how to improve the teaching of written composition through small group activities, the distribution of the supplementary instructional material, and suggestions for using this material in

the classroom.

The in-service meetings were followed up by a visit from the researcher to each of the schools involved in the experiment, during which time a conference was held with each of the participating teachers to discuss the progress of the experiment and any problems that might have occurred.

Pilot Study

A pilot study was conducted in two schools in Leduc, Alberta, at the end of February, 1968, to test the suitability of the curriculum units as teaching devices. Of particular concern were the interest value for teachers and pupils, the level of difficulty for fourth grade, the appropriateness of examples, and the length of time required to complete each lesson.

Four fourth-grade teachers undertook the teaching of one or more of the units for a period of approximately one week. One teacher was given Unit One and Unit Two; the other three teachers were each given one of Units Three, Four and Five. No trial study was made of Unit Six.

Results of a brief questionnaire, a discussion with the teachers, and an analysis of language samples submitted by the teachers indicated that the curriculum units were interesting for teachers and students, and that the concepts and examples in the units seemed generally suitable for fourth-grade instruction.

As a result of this trial study certain refinements were made

in the units to clarify directions for teachers, to replace unsuitable language examples, and to adjust the length of individual lessons.

III. DESCRIPTION OF THE LANGUAGE SAMPLES

Language samples consisted of four written compositions for each pupil. Two compositions were pretests and two were posttests.

To elicit similar language responses in pretesting and posttesting situations, four topics were selected in pairs, two being personal descriptions and two being descriptions of places. One of each type was randomly designated as pretest or posttest.

Pretest composition topics were:

A: "Description of a Favorite TV Character"

B: "Christmas at Our House"

Posttest composition topics were:

A: "Description of a Favorite Real Person"

B: "Description of a Favorite Place"

The composition topics were intended to encourage descriptive writing because it was felt that this type of writing would facilitate the use of skills intended to be developed by means of the curriculum units.

To obtain a reliable sample two compositions were assigned for both pretesting and posttesting. Research has shown that children's compositions vary in quality from composition to composition (Anderson, 1937, pp. 63-68; Traxler, 1935, p. 539). Braddock (1963,

p. 95) contends that when the purpose is to evaluate the effectiveness of different teaching methods, an evaluation should be based on several compositions from each student, writing on different topics and on different days. He also suggests that the same procedure be followed in pretesting and posttesting, with the nature of the assignment similar in both cases.

IV. ANALYSIS OF THE LANGUAGE SAMPLES

In analyzing the language samples, two measures of language maturity were taken:

1. Weighted index ratio of vocabulary of nominals.
2. Weighted index ratio of modification of nominals.

The objective of the curriculum units was to increase pupils' skill in making nominals more specific by improving their performance in:

1. Substitution of more specific nominals.
2. Expansion of nominals by using modification structures.

As there appears to be a logical and cumulative relationship between the two particular skills intended to be developed, the same relationship would exist in the measurement of these skills. The two measures would then be additive.

Nominal Vocabulary Index Ratio.

The type-token ratio and the frequency count are two commonly used

measures of vocabulary maturity (Armstrong, 1965, pp. 53-54). The type-token ratio measures diversity of vocabulary; the frequency count indicates the number of unusual and common words in a language sample (Loban, 1963, pp. 37-39). In the present study the frequency count was used.

Frequency count. As one of the skills to be developed in the units was the substitution of more specific nouns or other nominals for the frequently used, less precise words, a frequency count seemed to be a better measure of vocabulary maturity than the type-token ratio for this purpose.

Braddock (1963, p. 48) points out the usefulness of graded vocabulary word lists such as the Buckingham and Dolch, the Horn, the Rinsland, and the Lorge-Thorndike for judging vocabulary growth. Armstrong (1965) used a frequency count based on Rinsland's word list in developing an objective measure of the quality of children's written compositions. One of the major weaknesses of a frequency count, Armstrong (1965, p. 54) found, was that the process was too laborious for its low degree of accuracy as a measure of quality. Another fault with the Rinsland vocabulary list which is shared with all of the previously mentioned lists is that it "antedates any impact of television on vocabulary" (Braddock, 1963, p. 48). Consequently, many words like "television" and "space capsule," either missing from the list or given a low frequency rating, are common in children's vocabulary today.

Rinsland's word list. Despite its obvious weaknesses, Rinsland's list was chosen as a reference for precisely the same reasons that Armstrong gave for selecting it for his study. Rinsland's list is graded and was compiled from children's writing; consequently, it seemed to offer an accurate assessment of frequency for a specific grade level in analyzing children's writing (Armstrong, 1965, p. 54).

Rinsland's vocabulary list is made up of the 14,571 words occurring three or more times in any one grade. The Grade Four list contains 9,976 different words. For each word listed, Rinsland provides the number of times the word appeared at each grade level in the language sampled and, if the word is common, a symbol indicating its frequency category. As an example, "dog" is one of the first one hundred of the first five hundred of the first one thousand most common words used by children from first to fourth grade. For each of these four grades the category of "dog" is designated as 1a1. Correspondingly, "jungle", one of the fourth hundred of the second five hundred of the first thousand words found in fourth-grade writing is categorized as 1b4 for that grade.

Weighting and scoring. Frequency categories were given the same values as Armstrong (1965, pp. 54-55) used for his study:

<u>Category</u>	<u>Value</u>
1a1	10
1a2	11
1a3	12
1a4	13
1a5	14
1b1	15
1b2	16
1b3	17
1b4	18
1b5	19
2a	20
2b	25
3a	30
3b	35
4a	40
4b	45
5a	50
5b	55
6	60
7	70
8	80
9	90

A value of 100 was attached to:

1. Words listed in Rinsland but occurring too infrequently to be included in one of the frequency categories.
2. Difficult words not listed in Rinsland, for example, "trampoline", "emotions", et cetera.
3. Modern words not listed in Rinsland, for example, "plastic", "capsule", et cetera.

No value was given to the following categories of words.

1. Proper names.
2. Slang.

Many of the words that Rinsland classified as slang, for example, "movie", now seem to be considered as informal English. To distinguish between informal usage and slang, the Dictionary of Canadian English: The Intermediate Dictionary (1963) was used as the authority.

Each nominal in each composition was assigned the numerical value corresponding to its frequency category. Values were then totalled and averaged for each composition.

Nominal Modification Index Ratio

Modifiers of nominals were classified and weighted for each composition. Values were assigned on the basis of complexity of the modifier, determined largely by frequency of use as indicated in language development studies reviewed in Chapter II. Classification and weighting of modifiers was also made with reference to structural grammar as described by Stageberg (1965, pp. 202-209, pp. 226-227, pp. 235-254). Values ranged from 10 to 40.

Possessives and demonstratives. A value of 10 was given to:

1. Possessives of names and common nouns (John's, summer's, et cetera).
2. Phrasal genitives such as "the top of the tree".
3. Demonstratives (this, that, et cetera).

In their investigation of children's language, Hunt (1965, p. 109) and O'Donnell et al. (1967, p. 60) found that, as a group, genitives, including both the inflected and the phrasal with "of" were the most widely used noun modifiers by elementary school children.

For that reason, the lowest value was assigned to possessives and phrasal genitives. Possessive adjectives such as "his", "my", "and", "our", were given no value because they appeared with high regularity in the language samples examined by this researcher and seemed to be simply alternatives for the articles "a", "an", and "the". The articles were not given a value, for their function is determined by the basic grammar of English, which has been mastered by most children before school age (Stageberg, 1965, pp. 280-281; Ervin & Miller 1963, p. 122).

Demonstratives, while also replacements for articles, can add a little more precision than articles to nominals they modify. Hence, demonstratives were given a value of 10.

Adjectives and other single-word modifiers. A value of 20 was assigned to single-word modifiers of the following categories:

1. Adjectives (blue, angry, et cetera)
2. Adjectivals
 - a) derived adjectives (joyful, shaky, et cetera)
 - b) verbs (broken, talking, et cetera)
 - c) uninflected words (the tree outside)
 - d) noun adjuncts (apple pie, wool shirt, et cetera)
 - e) appositives (Bill, the pilot)
3. Other single-word modifiers, as classified by Stageberg.
 - a) restricters (only one toy)
 - b) predeterminers (all the boys)

- c) determiners (another, each, et cetera). Articles and possessive adjectives, the possessive of names, and demonstratives are excluded from this category.
- d) postdeterminers (one, five, few, several, et cetera)
- e) qualifiers (very, quite, rather, et cetera)

Empirical studies show that as a group single-word noun modifiers are used more frequently than word-group modifiers by elementary school children (Hunt, 1965; O'Donnell et al., 1967). Consequently, the single-word modifiers outlined in this subsection were given a value of 20.

Phrasal modifiers. A value of 30 was assigned to phrasal modifiers. Research shows that some phrasal modifiers, such as participial and infinitive phrases, are used less frequently than prepositional phrases (O'Donnell et al., 1967, p. 60; Hunt, 1965, pp. 101-109). However, as no distinction was made between prepositional and other phrasal modifiers in the curriculum units, it was decided to weight them all equally. As modifiers of nominals, prepositional phrases are used less often than adjectives but more often than relative clauses in the oral and written language of elementary school children (Hunt, 1965, p. 109; O'Donnell et al., 1967, pp. 57-63).

Clausal modifiers. Since children use relative clauses much less regularly as noun modifiers than they use prepositional phrases, relative clauses were assigned a value of 40 (Hunt, 1965; O'Donnell

et al., 1967).

Scoring. Weighted modification scores were added and averaged for each composition. Ratios were computed by dividing the total score by the number of nominal headwords in the composition. A headword may be any nominal other than a personal pronoun, a demonstrative pronoun, or a comparable (See Chapter I). Not every nominal was counted as a headword. In any nominal construction, whether consisting of a pre-nominal modifier-plus-nominal, a nominal-plus-phrase, a nominal-plus-clause, or a nominal-plus-cluster of modifiers, only one headword was counted. To count every nominal as a possible headword could discriminate against the more mature language user. An example will illustrate the logic of counting only one headword for a cluster of modifiers:

20 30

She lives in a red house by a lake.

Using one headword (house), the weighted index ratio is $50 \div 1 = 50$.

Using two headwords (house and lake), the weighted index ratio for this sentence is $50 \div 2 = 25$.

If all nominals were counted as headwords, then the child who uses an adjective and a phrase as modifiers would receive a lower score than a child who uses two adjectives as modifiers.

20 20

She lives in a big red house.

The weighted index ratio for this sentence is $40 \div 1 = 40$.

V. INTELLIGENCE QUOTIENTS

The pupils' intelligence quotients obtained from their cumulative record cards were derived from scores on the Otis Quick Scoring Mental Ability Tests - Alpha Test. This test includes both verbal and nonverbal material but yields only one score. The content of the test is entirely pictorial and geometric. The nonverbal part consists of marking a picture in a row of pictures which is different from others in the row. The verbal part consists of marking one picture in every row according to specific directions (Otis, 1954).

Split-half reliability coefficients were computed for this test for two samples of third-grade pupils. The resulting coefficients when corrected by the Spearman-Brown formula were .87 and .88.

According to Yates, as reported in Buros (1959, p. 499), although the reliability coefficient is not strikingly high, in certain cases the test may be used to advantage in segregating pupils into relatively homogeneous groups for teaching or for administrative or research purposes.

VI. STATISTICAL TREATMENT OF THE DATA

The raw scores made by the students in this sample were punched on data cards and processed at the Computing Centre of the University of Alberta.

To test the hypotheses that the experimental group would achieve

significantly higher gain scores than the control group in substitution and expansion of nominals and that when statistical adjustments are made for intelligence, the experimental group would achieve significantly higher gain scores than the control group, an analysis of variance in a groups-within-treatments design was used (Lindquist, 1953, pp. 172-187). In this procedure, the class mean of any variable is taken as the unit of analysis. F ratio tests were computed to determine the significance of difference between variance.

One of the advantages of this design, according to Lindquist (1953, p. 187), is that it takes into consideration the three types of error possibly present in an experiment of this nature.

1. Fluctuation resulting from a random sampling of students.
2. Differences among classes within the two treatment groups due to teacher differences.
3. Differences among subpopulations that are really characteristic of the treatment.

A serious disadvantage, Lindquist (1953, p. 187) states, is the relatively low efficiency of this design.

In the event that these procedures did not disclose significant differences, a simple randomized design was used, and an analysis of variance was computed using the subject as the unit of analysis.

Lindquist (1953, p. 186) writes that a total sample which is composed of intact groups could be considered as a simple random sample if it can be assumed that there are no real differences between groups or

subpopulations. In the present study it could not be assumed that there were no real differences among groups; however, in order to gain precision, an analytical treatment using the subject as the unit of analysis was attempted.

Because the objective of the curriculum units was to increase skill in substitution and expansion of nominals, using gain scores as the criterion variable seemed appropriate. A more efficient statistical analysis could be made, however, if pretest scores were used as a covariate and posttest scores were used as the criterion variable. Winer (1962, p. 581) recommends the use of covariates to increase the precision of an experiment. Consequently, as precision was sought in testing the second set of hypotheses, an analysis of covariance was employed.

Since the effects of the experimental treatment on the substitution of nominals and the expansion of nominals might be unequal, in the second set of hypotheses vocabulary and modification scores as well as total scores were used as criterion variables in order to provide a detailed analysis.

To test the hypotheses that when statistical adjustments are made for initial differences in pretest scores, the treatment group would achieve significantly higher nominal vocabulary scores, nominal modification scores, and total scores than the control group and that when statistical adjustments are made for initial differences due to intelligence and pretest scores, the treatment group would achieve

significantly higher scores on all three criteria than the control group, F ratio tests were computed, using the subject as the unit of analysis.

Finally, an F ratio test was used to determine whether, when adjustments are made for initial differences in pretest scores, the best weighting of pretest and posttest vocabulary and modification scores was a significantly better predictor of membership in either the treatment or the control group than the total scores.

VII. QUALITATIVE ANALYSIS

In addition to the statistical analysis, a limited qualitative analysis was carried out to investigate possible trends in pupils' learning during the six weeks' experiment. The raw data related to modification structures used by the experimental group were examined to investigate: (1) the performance of four ability groups identified on the basis of pretest modification scores, and (2) the modification structures used by the high-achievement group and a random group.

VIII. SUMMARY

This chapter presented a description of the sample, an outline of instructional and testing procedures, and a description of the language samples. Also included in the chapter were a description of the techniques for analysis of the language samples, a brief report of the source of pupils' intelligence quotients, and an outline of the statistical procedures and a qualitative analysis.

CHAPTER V

RESULTS AND ANALYSIS

This chapter presents an analysis of the data obtained from pretest and posttest compositions administered to the experimental and the control groups. Two types of analysis are considered, first, the results of the statistical treatment and, second, a qualitative analysis of the data from the experimental group only.

The chapter begins with an outline of the statistical procedures used in testing the hypotheses. Next, the outcomes of the analysis of variance in the groups-within-treatments design used in testing Hypotheses I and II are discussed. Then follows a discussion of the findings in respect to the testing of Hypotheses III, IV, and V, for which a simple randomized design was used. Finally, a qualitative analysis of some of the data from the experimental group is made to determine whether trends in pupils' performance in substitution and expansion of nominals can be identified.

I. STATISTICAL PROCEDURES FOR TESTING HYPOTHESES

The main purpose of the experiment was to evaluate the curriculum units, that is, to determine whether pupils who had been given learning experiences designed by the curriculum units performed significantly better than pupils who had not received such treatment.

For testing the hypotheses, the multiple linear regression

technique was applied to analyses of variance and covariance. The technique operates by comparing two models, (1) the full or unrestricted model, which contains the contributing or predictor variable and (2) the restricted model, from which the contributing or predictor variable is excluded. Squared multiple correlations are computed for each model. To determine the significance of the difference in the two squared multiple correlations, the F test is used. The F ratio is computed as follows:

$$F = \frac{(R_1^2 - R_2^2)/df_1}{(1 - R_1^2)/df_2}, \text{ where } R_1^2 \text{ and } R_2^2 \text{ are the squared multiple correlations in Model 1 and Model 2, respectively, and } df_1 \text{ and } df_2 \text{ are degrees of freedom for the numerator and the denominator, respectively.}$$

II. ANALYSIS OF VARIANCE IN GROUPS-WITHIN-TREATMENTS DESIGN

Hypothesis I

There is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

Before testing the hypothesis the experimental and the control class means for all the variables were first calculated because class means rather than subjects were used as cases in this analysis. Table II shows the experimental and the control class means for the two pretest scores, the two posttest scores, and the intelligence quotients. The average of each of these means, that is, the experimental and the

control group means for each variable, is also indicated in this table. It may be seen from Table II that the control group means exceeded slightly the experimental group means on both pretest scores and intelligence quotients, whereas the reverse was true on the two posttest scores. Thus the gain in performance from pretest to posttest was slightly greater for the experimental group.

To test the significance of the variance in total gain between the two groups an F test was applied, indicating the importance of membership in either the experimental or the control group as a predictor of achievement in substitution and expansion of nominals. As a preliminary step, three additional variables, mean vocabulary gain, mean modification gain, and mean total gain were generated. As shown in Table. III, the F ratio calculated between the unrestricted model and the restricted model, in which group membership was deleted, was .96 and had a probability of .34. This means that the probability that such a difference in means could be due to random error is thirty-four in one hundred. On the basis of this analysis the null hypothesis was not rejected.

Hypothesis II

When statistical adjustments are made for intelligence quotients, there is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

TABLE II

CLASS MEANS OF EXPERIMENTAL AND CONTROL GROUPS FOR ALL VARIABLES

EXPERIMENTAL GROUP								CONTROL GROUP			
Class	Pretest Vocab.	Pretest Modif.	Posttest Vocab.	Posttest Modif.	I.Q.	Class	Pretest Vocab.	Pretest Modif.	Posttest Vocab.	Posttest Modif.	I.Q.
1	41.6	21.3	42.7	23.3	100.3	1	49.3	20.7	42.3	33.5	111.3
2	45.6	23.0	49.7	40.6	106.9	2	55.6	25.6	46.3	25.2	110.5
3	45.4	25.1	46.6	42.9	106.9	3	53.6	25.0	51.4	34.6	109.7
4	55.1	24.3	53.2	41.8	107.7	4	49.4	17.6	40.4	32.5	102.5
5	49.0	23.0	40.9	27.3	106.3	5	51.7	30.3	55.3	51.4	110.9
6	51.7	20.2	47.4	40.3	106.6	6	47.7	19.1	44.4	24.7	109.8
7	52.6	19.6	49.7	30.8	111.3	7	48.9	22.4	43.6	30.9	105.4
8	52.4	24.1	45.3	31.1	116.4	8	50.6	22.3	42.5	33.3	113.4
Average Means	48.8	22.6	46.9	34.7	107.8	Average Means	50.9	22.9	45.7	33.2	109.2

TABLE III
ANALYSIS OF VARIANCE OF EXPERIMENTAL AND CONTROL GROUPS
ON TOTAL OF VOCABULARY AND MODIFICATION GAIN SCORES

Restriction	Non-Restricted Squared Multiple Correlation R_1^2	Restricted Squared Multiple Correlation R_2^2	df Num.	df Denom.	F	Probability Level
Group Membership	.0643	0	1	14	.9624	.3432

$$F = \frac{(R_1^2 - R_2^2)/df_1}{(1 - R_1^2)/df_2}$$

* Significant at $p < .05$, $F \geq 4.60$.

** Significant at $p < .01$, $F \geq 8.86$.

To test this hypothesis, mean intelligence quotients were retained in the full and the restricted models, and the group membership variable was deleted from the restricted model. The correlation between intelligence and gain scores was negative and low ($-.1135$). An F ratio of .78 with a probability level of .39 was obtained, as indicated in Table IV. Hence, the second hypothesis also could not be rejected. In other words, the presence of mean intelligence scores in both models did not improve the prediction of the full model.

In summary, Table II illustrated marginal differences favoring the experimental group in gain from pretest to posttest. The differences were not significant, however, when the class was used as the unit of analysis in testing Hypotheses I and II.

III. ANALYSIS OF COVARIANCE WHEN A SIMPLE RANDOMIZED DESIGN WAS USED

In order to increase the possibility of significant differences, Hypotheses III, IV, and V were generated and tested, using the mean pretest scores as covariates and the subject as the unit of analysis. According to Lindquist, a simple randomized design in which the subject becomes the unit of analysis may be used if there are no real differences among classes within treatments (Lindquist, 1953). However, it could not be assumed that there were no real differences among classes within treatments; nevertheless, a simple randomized design was used in testing hypotheses III, IV, and V.

TABLE IV

ANALYSIS OF VARIANCE ON TOTAL GAIN SCORES OF EXPERIMENTAL AND CONTROL GROUPS
ADJUSTED FOR THE EFFECT OF THE INTELLIGENCE VARIABLE

Restriction	Non-Restricted Squared Multiple Correlation R_1^2	Restricted Squared Multiple Correlation R_2^2	df Num.	df Denom.	F	Probability Level
Group Membership	.0691	.0129	1	13	.7856	.3915

$$F = \frac{(R_1^2 - R_2^2)/df_1}{(1 - R_1^2)/df_2}$$

* Significant at $p < .05$, $F \geq 4.67$.

** Significant at $p < .01$, $F \geq 9.07$.

Hypothesis III

When statistical adjustments are made for initial differences in pretest scores there is no significant difference between the means of treatment and control groups in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.
3. Total scores.

Hypothesis IV

When statistical adjustments are made for intelligence quotients and for initial differences in pretest scores there is no significant difference between the means of treatment and control group in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.
3. Total scores.

Hypotheses III and IV were tested by deleting the group membership variable from the restricted model. In Hypothesis III the pretest variable was kept in both the full and the restricted models. For Hypothesis IV both the pretest variable and the intelligence variable were retained. As Tables V and VI indicate, no significant differences were disclosed in testing either of these hypotheses, thereby supporting the null hypotheses.

The correlation coefficients calculated for the testing of Hypothesis IV proved interesting. As illustrated in Table VII, there

TABLE V

ANALYSES OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS

ON NOMINAL VOCABULARY AND MODIFICATION SCORES

WHEN ADJUSTED FOR INITIAL DIFFERENCES ON PRETESTS

Criterion	Restriction	Non-Restricted	Restricted	df Num.	df Denom.	F	Probability Level
		Squared Multiple Correlation R_1^2	Squared Multiple Correlation R_2^2				
Vocabulary	Group Membership	.0286	.0248	1	157	.6204	.4319
Modifica- tion	Group Membership	.0358	.0328	1	157	.4882	.4856
Total Scores	Group Membership	.0847	.0775	1	157	1.2410	.2668

$$F = \frac{(R_1^2 - R_2^2)/df_1}{(1 - R_1^2)/df_2}$$

* Significant at $p < .05$, $F \geq 3.91$.

** Significant at $p < .01$, $F \geq 6.81$.

TABLE VI
ANALYSES OF COVARIANCE OF EXPERIMENTAL AND CONTROL GROUPS
ON NOMINAL VOCABULARY AND MODIFICATION SCORES
WHEN ADJUSTED FOR INITIAL DIFFERENCES
ON PRETESTS AND ON INTELLIGENCE QUOTIENTS

Criterion	Restriction	Non-Restricted	Restricted	df Num.	df Denom.	F	Probability Level
		Squared Multiple Correlation R_1^2	Squared Multiple Correlation R_2^2				
Vocabulary	Group Membership	.0398	.0353	1	156	.7222	.3968
Modifica- tion	Group Membership	.0382	.0349	1	156	.5330	.4666
Total Scores	Group Membership	.0902	.0824	1	156	1.3277	.2510

$$F = \frac{(R_1^2 - R_2^2)/df_1}{1 - R_1^2)/df_2}$$

* Significant at $p < .05$, $F \geq 3.91$.

** Significant at $p < .01$, $F \geq 6.81$.

TABLE VII
CORRELATIONS OF INTELLIGENCE
WITH PRETEST AND POSTTEST SCORES

Variables	Pretest	Posttest
Vocabulary	.1243	.1215
Modification	.2064*	.0826
Total Scores	.2150**	.1286

* Significant at the .05 level, $r \geq .159$

** Significant at the .01 level, $r \geq .208$

was a low positive correlation between intelligence and each of the pretest variables which was significant when modification and total pretest scores were each correlated with intelligence. When intelligence was correlated with the posttest variables, the coefficients decreased considerably. This would tend to concur with the correlation calculated in testing Hypothesis II, where it was found that intelligence correlated slightly but negatively with gain scores when classes were considered as the experimental unit.

The pretest vocabulary scores were much higher than the pretest modification scores for both the experimental group and the control group. Table II shows that in the pretests of both groups, the mean vocabulary scores are more than twice the mean modification scores. To determine whether this unequal weighting of scores affected the outcomes of the analysis of variance when total scores were used as the criterion, a final hypothesis was formulated.

Hypothesis V

When statistical adjustments are made for initial differences in pretest scores, the best weighting of the posttest scores is not significantly better as a predictor of group membership than the total scores.

In testing this hypothesis the mean posttest vocabulary scores and the mean posttest modification scores were two separate variables in the unrestricted model. These two variables, however, were replaced by the mean total vocabulary and modification scores in the

restricted model. As shown in Table VIII, the difference between the unrestricted squared multiple correlation (.0155) and the restricted squared multiple correlation (.0135) was very slight (.0020), indicating that there was very little difference between the best weighting of the scores and the total scores as a predictor of group membership. Thus, the corresponding F score was extremely low, and the null hypothesis was accepted in this instance.

When a simple randomized design was used for the statistical analysis of the data for this study, the use of subjects rather than classes as individual cases multiplied the degrees of freedom and, thus, increased the possibility of significance. No significant differences were found, however, when using this procedure. In fact, probability levels for the tests of Hypotheses III, IV, and V, except when total scores were used as the criterion, exceeded those of Hypotheses I and II. Consequently, using a simple randomized design did not, in this case, provide a more precise statistical treatment of the data than did the groups-within-treatments design.

In summary, although small differences in language scores were found in favor of the experimental group, the statistical analysis of the data collected for this experiment showed that these slight differences were not significant and gave no basis for rejection of any of the null hypotheses formulated. In other words, there is no empirical evidence from this study to support the hypotheses that the curriculum units are effective teaching-learning devices in improving

TABLE VIII

ANALYSIS OF COVARIANCE TO DETERMINE WHETHER THE BEST WEIGHTING
 OF POSTTEST SCORES IS SIGNIFICANTLY BETTER AS A PREDICTOR
 OF GROUP MEMBERSHIP THAN THE TOTAL SCORE
 WHEN ADJUSTMENTS HAVE BEEN MADE FOR INITIAL DIFFERENCES
 ON PRETESTS

Non-Restricted Squared Multiple Correlation	Restricted Squared Multiple Correlation	df Num.	df Denom.	F	Probability Level
R_1^2	R_2^2				
.0155	.0135	2	155	.1599	.8523

$$F = \frac{(R_1^2 - R_2^2)/df_1}{(1 - R_1^2)/df_2}$$

* Significant at $p < .05$, $F \geq 3.06$.

** Significant at $p < .01$, $F \geq 4.75$.

pupils' performance in substitution and expansion of nominals.

IV. QUALITATIVE ANALYSIS OF DATA FROM EXPERIMENTAL GROUP

A limited qualitative analysis of some of the data from the experimental group was undertaken to inquire into the possibility of identifying trends in pupils' performance in expansion of nominals during the six weeks' instruction and practice. Such trends might lead to further refinement of the curriculum units and the formulation of additional hypotheses regarding children's language learning in general and these instructional units in particular. Since the analyses revealed a mean loss rather than a mean gain in vocabulary growth for both the experimental and the control groups, it was decided to confine the qualitative analysis to modification performance.

Two areas were investigated: (1) the performance of cross-class ability groups and (2) the modification structures used by the high achievement group and a random group.

Comparison of the Performance of Four Ability Groups

For the purpose of this analysis four ability groups were identified from the eighty subjects of the experimental subsample solely on the basis of pretest modification scores. The high group consisted of the twenty highest scores; the high-average group, the second twenty highest scores; the low-average group, the third twenty highest scores; and the low group, the lowest twenty scores. These ability groups are, then, cross-class groups.

As illustrated in Figure 1, the mean pretest modification score for the top twenty pupils was 33.7 points. The mean posttest score for the same group was 32.8 points, which represents a loss of .9 points. This decrease from pretest to posttest might have been a statistical regression to the mean. On the other hand, the decrease might indicate that the high group did not benefit from the instruction provided by the curriculum units. The high-average group made the most dramatic gain, from 24.0 to 42.4. The widest gap in the ability groups was between the high and the high-average groups, as indicated by their pretest scores. However, the high-average group exceeded the high group in the posttest by 9.6 points. In fact, the high-average group made the greatest advances of any of the four groups. The low-average group moved from 19.6 to 33.2, slightly exceeding the high group on the posttests. An interesting finding was that the low group, which had a mean pretest modification score of 13.0 points, advanced to a mean score of 30.6 in the posttest, gaining almost as much as the high-average group. All of the ability groups made substantial gains from the pretest to the posttest except the high group, which showed a slight loss.

In Table IX a comparison is made between the mean modification gain scores and the mean intelligence quotients of the four ability groups. The mean intelligence quotient for the high group was 113.9. The high-average and the low-average groups have close intelligence-quotient means, about five points lower than the high group. The low group showed a mean intelligence quotient of 100.4. The hierarchy of

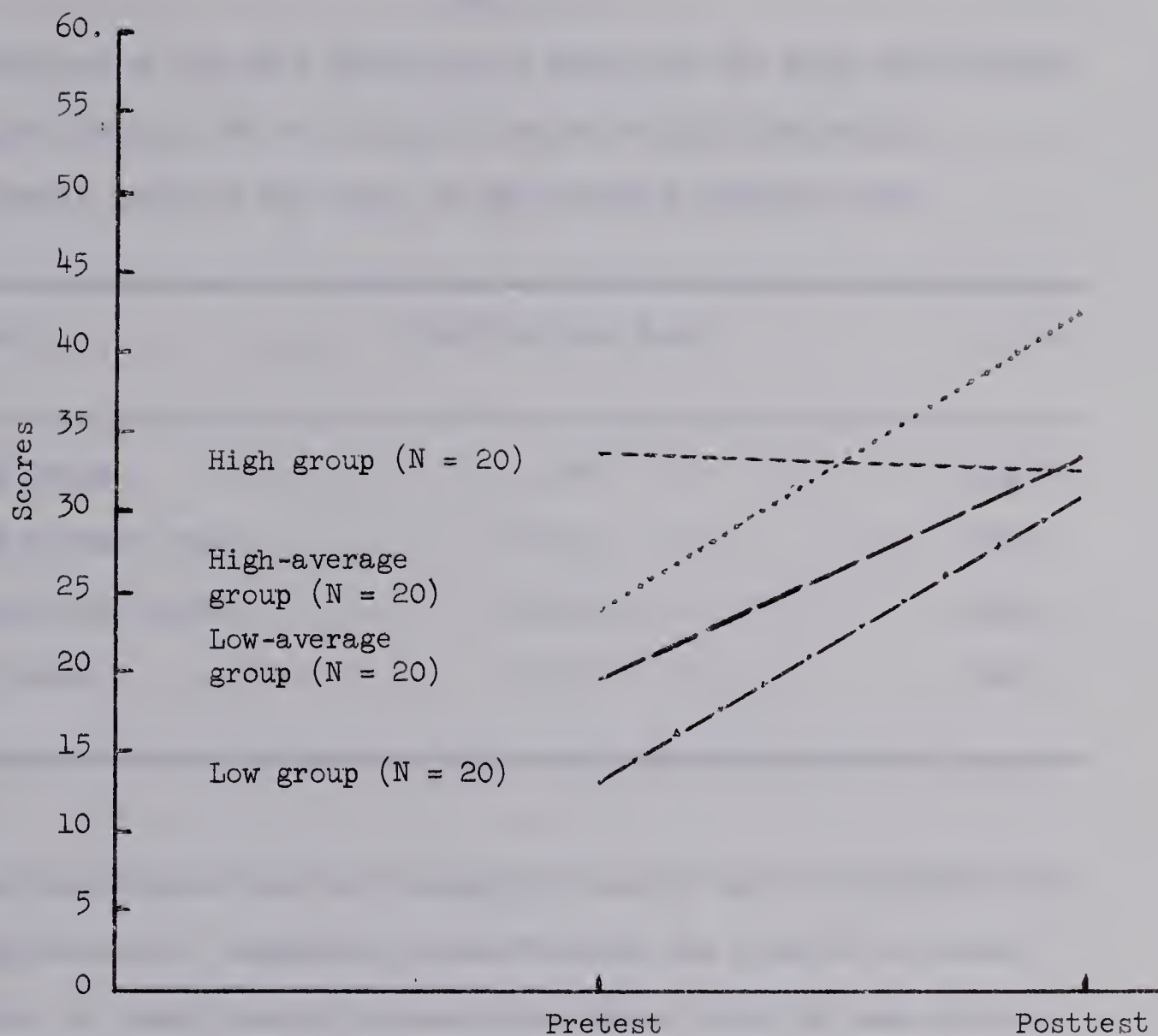


FIGURE 1

COMPARISON OF THE MEAN MODIFICATION GAINS MADE BY FOUR ABILITY
GROUPS OF THE EXPERIMENTAL SUBSAMPLE RATED ON THE BASIS
OF MODIFICATION PRETEST SCORES

TABLE IX

COMPARISON OF THE MEAN MODIFICATION GAINS AND THE MEAN INTELLIGENCE
 QUOTIENTS OF THE FOUR ABILITY GROUPS OF THE EXPERIMENTAL
 SUBSAMPLE RATED ON THE BASIS OF MODIFICATION PRETEST SCORES

Groups	Modification Gains	I.Q.
High group	- .9	113.9
High-average group	18.4	108.1
Low-average group	13.6	108.7
Low group	17.6	100.4

mean intelligence quotients suggested that at the fourth-grade level of development, competency in modification was related to intelligence. A comparison of the mean gain scores with the mean intelligence quotients seemed to indicate that advancement in modification skills was not necessarily dependent on intelligence. The implications of group differences in modification growth and the relation of intelligence to achievement in this respect will be discussed in Chapter VI.

Comparison of Modification Structures of the High-Achievement Group and a Random Group

The high group was identified for this purpose by selecting

the ten subjects from the experimental subsample who made the greatest gains in modification. A random selection of ten subjects was then made. As Figure 2 indicates, the high achievers had used few modification structures in the pretest than did the random group but exceeded them in the posttest modification. The high group used an average of .36 single-word modifiers for each nominal in the pretest and an average of 1.06 single-word modifiers for each nominal in the posttest. The mean numbers of single-word modifiers for each nominal found for the random group were .44 on the pretest and .58 on the posttest. The high group advanced in the use of word-group modifiers from a mean of .05 for each nominal to a mean of .28. For the random group, the advance in this respect was slight, that is, from .10 to .11.

Both groups made proportionately more advancement in the use of single-word modifiers than they did in the use of word-group modifiers. For the high-achievement group, seventy-five per cent of the increase in nominal modifiers is accounted for by single-word modifiers. For the random group, single-word modifiers accounted for ninety-three per cent of the increase.

Summary of the Qualitative Analysis

In this section a qualitative analysis was attempted by looking at two different aspects of the experimental group's performance in nominal modification. When four ability groups were identified, it was found that all but the high group gained in modification

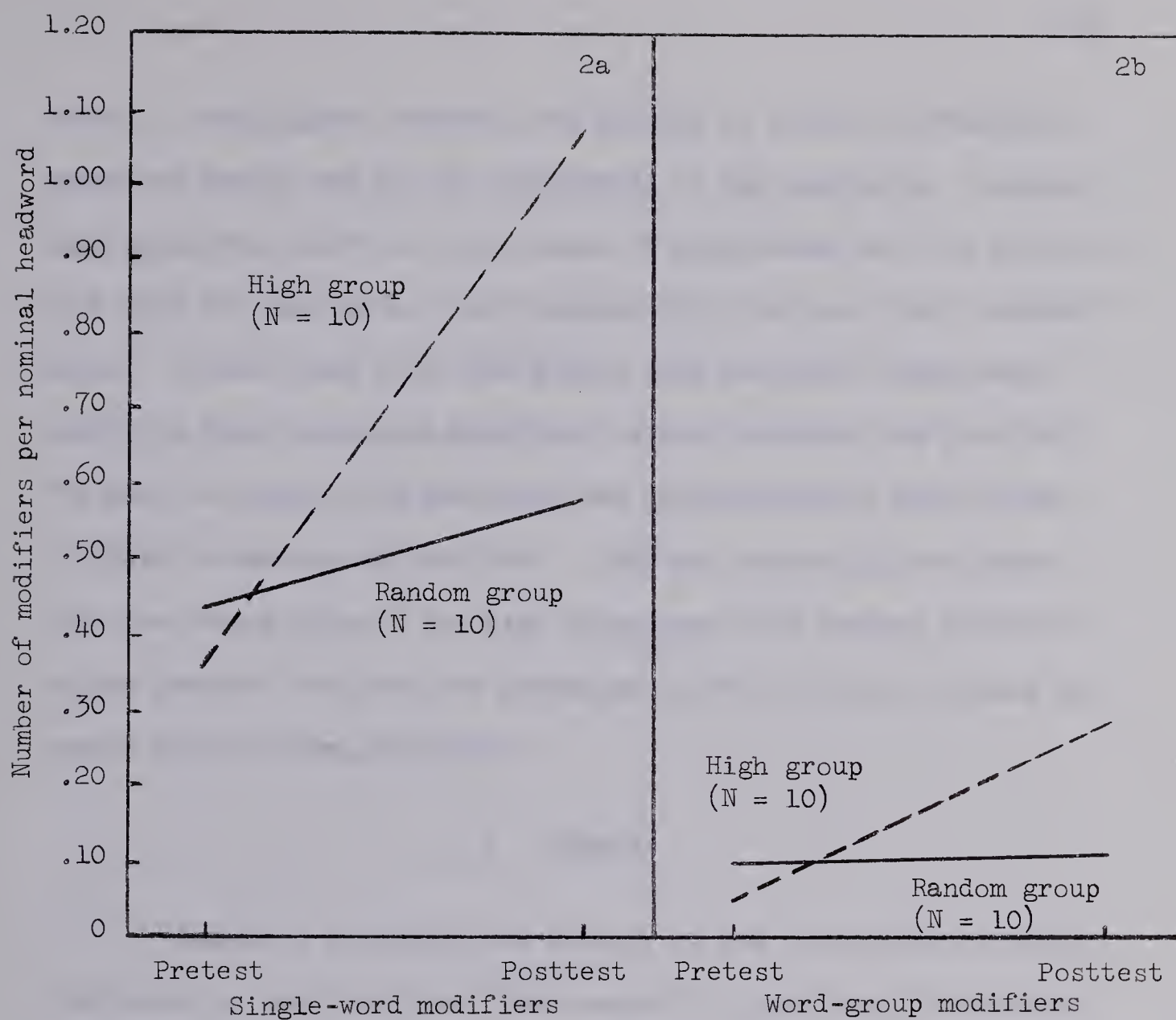


FIGURE 2

COMPARISON OF MODIFICATION STRUCTURES OF THE TEN HIGHEST
GAIN SCORERS WITH THE MODIFICATION STRUCTURES
OF A RANDOM GROUP IN THE EXPERIMENTAL SUBSAMPLE

scores. Intelligence seemed to be related to initial differences among the groups but not to achievement on the posttests. Another high group was selected on the basis of achievement and the modification data for this group was compared with the data from a random group. It was found that both groups used many more single-word modifiers than word-group modifiers in both pretests and posttests. The gain in single-word modifiers was proportionately higher than the gain in word-group modifiers. This was especially noticeable with the random group. The high group used less nominal modifiers in the pretests than did the random group but, by far, exceeded the random group on the posttests.

V. SUMMARY

Chapter V discussed the results of the statistical analysis, from which it was found that there were no significant differences between the means of the experimental and the control groups in substitution and expansion of nominals.

A qualitative analysis produced several interesting findings which may suggest further hypotheses and possible procedures for future language curriculum research.

CHAPTER VI

SUMMARY, CONCLUSIONS, AND IMPLICATIONS

In presenting a summary of the study, this chapter reviews the problem, the purpose, and the design. From a discussion of the statistical and the qualitative analysis several conclusions are derived. Implications for language instruction and suggestions for further research are also included in the chapter.

I. SUMMARY

In recent years many new developments have occurred in linguistics and in the study of children's language. Few of these have had an impact on language instruction in elementary school. One way to effect a diffusion of this new knowledge in the language curriculum is to use the findings of linguistics and child language studies as resources in developing instructional units for classroom implementation.

The purpose of this study was (1) to design language curriculum units for fourth grade to improve pupils' performance in substitution and expansion of nominals in speech and in writing and (2) to evaluate the effectiveness of these units by means of a controlled experiment.

Using the findings of pertinent and recent research, six curriculum units were constructed and taught in several classes of

the Edmonton Separate School System.

Sixteen classes from ten schools participated in the experiment. Two groups of eight classes from five schools were formed arbitrarily, and treatment was assigned on a random basis. The experimental group was taught the curriculum units for six weeks, during which time the control group continued with the regular program supplemented with material provided by the investigator.

Pretest and posttest written compositions were collected from both groups, and intelligence test scores were obtained from the school records. A random selection of language samples from ten pupils was made for each class. Two measures of language maturity were taken: (1) a weighted nominal vocabulary index ratio and (2) a weighted modification index ratio. The data obtained from the language analysis were processed at the Computing Centre at the University of Alberta.

To determine whether pupils given language experiences provided by the curriculum units made significantly greater improvements in substitution and expansion of nominals than did the pupils in the control group, two sets of analysis of variance were applied. The unit of analysis for the first set was the class group; for the second set the unit was the subject. For each analysis an F ratio was computed to test the significance of difference.

A limited qualitative analysis of the raw data of the experimental group was made to investigate trends in language skill develop-

ment which could be attributed to the experimental instruction.

Findings of the statistical and the qualitative analyses are reviewed in the next section in relation to conclusions.

II. CONCLUSIONS BASED ON THE STATISTICAL ANALYSIS

Hypotheses

Hypothesis I. There is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

Hypothesis II. When statistical adjustments are made for intelligence quotients, there is no significant difference between the mean gain of treatment and control groups in total nominal vocabulary and modification index ratio scores.

Hypothesis III. When statistical adjustments are made for initial differences in pretest scores, there is no significant difference between the means of treatment and control groups in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.
3. Total scores.

Hypothesis IV. When statistical adjustments are made for intelligence quotients and for initial differences in pretest scores there is no significant difference between the means of treatment and control groups in:

1. Nominal vocabulary index ratio scores.
2. Modification index ratio scores.
3. Total scores.

Hypothesis V. When statistical adjustments are made for initial differences in pretest scores, the best weighting of the posttest scores is not significantly better as a predictor of group membership than the total scores.

Review of Findings

No significant differences were found when these hypotheses

were tested. Thus, none of the null hypotheses could be rejected. The statistical analysis, then, failed to show that the pupils' performance in substitution and expansion of nominals was improved by means of the curriculum units.

In testing Hypothesis II, a low negative correlation was found between intelligence test scores and the total language gain scores when the class group was considered as the experimental unit. When Hypothesis IV was tested by using the subject as the unit of analysis, there was a low positive correlation between intelligence scores and each of the pretest variables. The correlation coefficients were considerably lower when calculated between intelligence scores and the modification posttest variable and between intelligence scores and the total posttest variable. For this experiment, then, intelligence seemed to be related to initial vocabulary and modification development but not to improved performance as a result of the six weeks' instruction provided through the curriculum units.

Conclusions

There is no evidence from the results of the experiment that the curriculum units resulted in increased skill in substitution and expansion of nominals. However, because of the brief instructional time and the small number of participating classes, no conclusive statements can be made regarding the quality of the curriculum units.

The fact that (1) intelligence correlated negatively with total

gain scores and (2) intelligence correlated less highly with modification and total score in the posttests than with the corresponding pretest scores suggests that structured learning experiences in language might be less suitable for children of higher intelligence than they are with children of lower mental ability. The relation of intelligence to language performance is discussed further in the next section.

In summary, it cannot be concluded from the results of this experiment that curriculum units such as the ones prepared for the present study are effective teaching-learning devices for improving fourth-grade children's performance in substitution and expansion of nominals when taught over a six-week period.

III. CONCLUSIONS BASED ON THE QUALITATIVE ANALYSIS

A limited qualitative analysis of the raw data of the experimental group was made. While no definite conclusions can be drawn regarding the efficacy of the units as a result of this analysis, certain inferences may be made which might lead to the formulation of additional hypotheses.

Comparison of the Performance of Four Ability Groups

The four ability groups of pupils, identified solely on the basis of pretest modification scores, differ considerably in their performance on pretests and posttests. The high group lost rather than gained from pretest to posttest. The high-average group made the most

impressive gains of all four groups, exceeding the high group by 9.6 points. The low-average group exceeded the high group in posttest scores, while the low group, which averaged only 13.0 in the pretest, averaged 30.6 in the posttest, which was only 2.3 points less than the high group in the posttests.

It may be, then, that the curriculum units are not suitable as instructional devices for fourth-grade children who have already a relatively mature mastery of modification skills. Perhaps these children have already acquired the structures being developed through the curriculum units, and continued instruction has the effect of restricting their written performance. Children of high-average ability in modification would seem to be at the stage when they can benefit most from such instruction. Children of the low-average and low ability in modification skill also seem also to benefit from this instruction.

As Table IX, p. 93 indicates, intelligence seems to be associated with initial ability in the use of modification structures but not necessarily with achievement in this respect. It had been concluded earlier that there was a low positive correlation between intelligence and pretest modification scores, but that the correlation between intelligence and posttest modification scores was considerably lower. An examination of Table IX shows that the modification performance of the high group in the posttest may be a strong factor in this low correlation of intelligence and posttest modification and may, in fact, explain the discrepancy between the correlation coefficients

relating (1) intelligence and pretest modification and (2) intelligence and posttest modification.

Comparison of Modification Structures of the High-Achievement Group and a Random Group

The findings of this qualitative analysis support the previous inference that those subjects who make the greatest improvement when given structured learning experiences are not usually those who are initially the more linguistically competent. Figure 2, p. 95, illustrated that the high achievers had used fewer single-word and word-group modifiers in the pretest than did the random group but exceeded the random group in the use of these modification structures in the posttest.

It was found that seventy-five per cent of the increase in the nominal modifiers of the high-achievement group is accounted for by single-word modifiers, whereas single-word modifiers made up ninety-three per cent of the random group's increase. Two inferences can be drawn from these findings: (1) the curriculum units are more successful in improving fourth-grade pupils' written performance in the use of single-word modifiers than word-group modifiers, and (2) children who make the greatest advancement in the use of written modification structures increase their word-group modifiers to a greater degree than do the average pupils. All fourth-grade children, but especially the average and low-average ability groups in language, may require more extended instruction and practice in the use of word-group modifiers.

IV. IMPLICATIONS FOR LANGUAGE INSTRUCTION

The following implications for teaching are not the result of the statistical analysis but are derived from the qualitative analysis of the language of the experimental group and may be considered as possible hypotheses which could be tested in a classroom.

1. Children who are highly competent in language may not benefit from structured language learning experiences so much as children who have less initial competence.
2. Children in middle and upper elementary school, with the possible exception of superior language users, probably will benefit from structured sequential language instruction.
3. Because the experimental group in this study advanced much more slowly in increasing word-group modifiers in their written language, average and below-average language ability groups at the fourth-grade level may require extended instruction and practice in using word-group modifiers.
4. In recognition of individual abilities, interests, and learning rates, intra-class grouping, commonly used for reading and mathematics, will improve language learning in school.

V. RECOMMENDATIONS

1. Because of the difficulty of obtaining statistical significance, it is suggested that curriculum research in language or in any other area should be carried out in a large number of classes by a team of research workers.

2. One cause of insignificant differences in this experiment may have been the short duration of instruction. For mastery of language skills experimental curriculum units could be designed for a term considerably longer than six weeks.
3. Another factor that might have affected the outcomes of this study was insufficient in-service training. In conducting research for implementation by classroom teachers adequate in-service training is necessary to ensure that the teachers have a good grasp of the objectives and methods of the experimental program.
4. Because of the wide range of pupil abilities and rates of learning as evidenced in the pretest and posttest data analyzed for this study, it is suggested that language curriculum units be designed for several ability groups within the one grade level.
5. There is need for more refined studies to determine the effect of intelligence on the inductive learning of language skills.
6. The use of Rinsland's word frequency list was time-consuming and, because it is an old publication, was ineffective in measuring vocabulary growth. There is need for developing an efficient, usable vocabulary measure.
7. The more interesting findings of this study were the result of a limited qualitative analysis. For a deeper understanding of the effect of a curriculum on the pupils, more use could be made of qualitative analysis in educational research.

V. CONCLUDING STATEMENT

For this study, a series of curriculum units was designed to improve fourth-grade pupils' performance in substitution and expansion of nominals. An evaluation of the units by means of a controlled experiment disclosed no significant differences. Results of a qualitative analysis led to an interesting observation that children with average and low ability in using nominal modifiers in their written language benefit more from structured learning experiences than does the high-ability group, whose performance in this respect seems to be inhibited by these experiences.

REFERENCES

REFERENCES

- Anderson, J. E. An evaluation of various indices of linguistic development. Child Development, 1937, 8, 62-68.
- Armstrong, R. D. An objective measure of the quality of the written composition of fifth-grade pupils. Unpublished doctoral thesis, University of California, Berkeley, 1965.
- Bear, M. V. Children's growth in the use of written language. Elementary English Review, 1939, 26, 312-319.
- Bernstein, B. Social structure, language, and learning. In J. P. De Cecco (Ed.), The psychology of language, thought, and instruction. New York: Holt, Rinehart & Winston, 1967. Pp. 89-103.
- Braddock, R., Lloyd-Jones, R., & Schoer, L. Research in written composition. Champaign, Ill.: National Council of Teachers of English, 1963.
- Brown, R. W. Language and categories. In J. S. Bruner et al., A Study of Thinking. New York: John Wiley & Sons, 1956. Pp. 247-312.
- Bruner, J. S. The process of education. New York: Vintage Books, Random House, 1960.
- Bryan, F. E. How large are children's vocabularies? Elementary School Journal, 1953, 54, 210-216.
- Burrows, A. T. Children's language. National Elementary Principal, 1965, 45, 16-21.
- Carroll, J. B. Determining and numerating adjectives in children's speech. Child Development, 1939, 10, 215-219.
- Carroll, J. B. Language and thought. Englewood Cliffs, N. J.: Prentice-Hall, 1965.
- Carroll, J. B. Language development. In C. W. Harris (Ed.). Encyclopedia of educational research. (3rd ed.) New York: MacMillan, 1960. Pp. 744-750.
- Carroll, J. B. The study of language. Cambridge: Harvard University Press, 1963.

- Cassidy, F. G. Some thoughts on language and language processes.
In B. J. Weiss, Language, linguistics, and school programs.
Proceedings of the Spring Institutes, National Council of Teachers-
of English. Champaign, Ill.: National Council of Teachers of
English, 1963. Pp. 1-15.
- Chase S. Descriptive adjectives in children's vocabularies.
Elementary English Review, 1937, 14, 11-16.
- Chomsky, N. Review of Skinner's verbal behavior. In J. P. De Cecco
(Ed.), The psychology of language, thought, and instruction.
New York: Holt, Rinehart, & Winston, 1967. Pp. 325-339.
- Cook, D. L. The Hawthorne effect in educational research. Phi Delta
Kappan, 1962, 44, 116-122.
- Davis, E. A. The location of the subordinate clause in oral and
written language. Child Development, 1941, 4, 333-338.
- Dictionary of Canadian English: The intermediate dictionary.
Toronto: W. J. Gage, 1963.
- Ervin, S. M., & Miller, W. R. Language development. In H. W.
Stevenson et al. (Ed.) Child psychology. Sixty-second yearbook
of the National Society for the Study of Education, Part I.
Chicago: University of Chicago Press, 1963. Pp. 108-143.
- Francis, W. N. The structure of American English. New York:
Ronald Press, 1958.
- Frick, H. L. Theories of general education in curriculum development.
In V. E. Herrick and R. W. Tyler (Ed.), Toward improved curriculum
theory. Supplementary Educational Monographs, No. 71. Chicago:
University of Chicago Press, 1950. Pp. 17-25.
- Fries, C. C. American English grammar. New York: Appleton-Century-
Crofts, 1940.
- Fries, C. C. Teaching and learning English as a foreign language.
Ann Arbor, Mich.: University of Michigan Press, 1956.
- Furth, H. Thinking without language. Toronto: Collier, MacMillan
Canada, 1966.
- Gleason, H. A. Linguistics and English grammar. New York: Holt,
Rinehart, & Winston, 1965.

- Goodman, K. S. A communicative theory of the reading curriculum. Elementary English, 1963, 40, 290-298.
- Hall, R. A. Jr. Introductory linguistics. Philadelphia: Chilton Books, 1964.
- Harrell, L. E. Jr. A comparison of the development of oral and written language in school-age children. Child Development Monographs, 1957, 22, No. 3.
- Haslerud, G. M., & Meyers, S. The transfer value of given and individually derived principles. In R. F. Grose & R. C. Birney, (Ed.), Transfer of learning. Princeton, N. J.: D. Van Nostrand, 1963. Pp. 142-151
- Hogan, R. F. English. In G. G. Unruh (Ed.), New curriculum developments. Washington: Association for Supervision and Curriculum Development, 1965.
- Hoppes, W. C. Considerations in the development of children's language. Elementary English Review, 1934, 11, 66-70.
- Hunt, K. W. Grammatical structures written at three grade levels. Champaign, Ill.: National Council of Teachers of English, 1965.
- Inhelder, B., & Piaget, J. The early growth of logic in the child. London: Routledge & Kegan Paul, 1964.
- Jenkins, J. J. Learning theories. In J. P. De Cecco (Ed.), The psychology of language, thought, and instruction. New York: Holt, Rinehart, & Winston, 1967.
- Joos, M. Language and the school child. Harvard Educational Review, 1964, 34, 203-210.
- Kagan, J. Learning, attention and the issues of discovery. In L. S. Shulman & E. R. Keislar, (Ed.), Learning by discovery: A critical approach. Chicago: Rand McNally, 1966. Pp. 151-161.
- Kersh, B. Y. Learning by discovery: What is learned? Arithmetic Teacher, 1964, 11, 226-232.
- LaBrant, L. The changing sentence structure of children. Elementary English Review, 1934, 11, 59-65.
- Lane, P. A. Structure and the elementary school language program. Elementary School Journal, 1967, 38, 147-156.

- Lindquist, E. F. Designs and analysis of experiments in psychology and education. Boston: Houghton Mifflin, 1953.
- Loban, W. D. The language of elementary school children. Champaign, Ill.: National Council of Teachers of English, 1963.
- Lull, H. G. The speaking and writing abilities of intermediate grade pupils. Journal of Educational Research, 1929, 20, 73-77.
- May, F. B. Teaching language as communication to children. Columbus, Ohio: Charles E. Merrill, 1967.
- McCarthy, D. Language development in children. In L. Carmichael (Ed.), Manual of child psychology. New York: John Wiley & Sons, 1954. Pp. 492-630.
- McDonald, A. S. Evaluation of innovations in reading instruction. In H. A. Robinson (Ed.), Recent developments in reading. Supplementary Educational Monographs, No. 95. Chicago: University of Chicago Press, 1965.
- Menyuk, P. A descriptive study of the syntactic structures in the language of children: Nursery school and first grade. Unpublished doctoral thesis, Boston University, 1961.
- Michaelis, J. U., Grossman, R. H., & Scott, L. F. New designs for the elementary school curriculum. New York: McGraw-Hill, 1967.
- Miller, G. A. Some preliminaries to psycholinguistics. In J. P. De Cecco (Ed.), The psychology of language, thought, and instruction. Holt, Rinehart & Winston, 1967.
- O'Donnell, R. C., Griffin, W. J., & Norris, R. C. Syntax of kindergarten and elementary school children: A transformational analysis. Champaign, Ill.: National Council of Teachers of English, 1967.
- Otis, A. A. Otis quick-scoring mental ability tests. (New Ed.) Manual of Directions. Yonkers-on-Hudson, N. Y.: World Book, 1954.
- Piaget, J. The language and thought of the child. London: Routledge & Kegan Paul, 1959.
- Pooley, R. C. Teaching English usage. New York: Appleton-Century-Crofts, 1946.
- Rinsland, H. D. A basic vocabulary of elementary school children. New York: Macmillan, 1945.

- Roberts, P. English syntax. (Alternate Ed.) New York: Harcourt, Brace, & World, 1964.
- Russell, D. H. Children's thinking. Boston: Ginn, 1956.
- Stageberg, N. C. An introductory English grammar. New York: Holt, Rinehart, & Winston, 1965.
- Stephens, J. M. Transfer of learning. In R. F. Grose and R. C. Birney (Ed.), Transfer of learning. Princeton, N. J.: D. Van Nostrand, 1963. Pp. 103-121.
- Strang R. Developing oral expression. National Elementary Principal, 1965, 45, 36-41.
- Strickland, R. The language of elementary school children: Its relationship to the language of reading textbooks and the quality of reading of selected children. Bureau of Educational Studies, 38, No. 4, School of Education, Indiana University, 1962.
- Taba, H. Curriculum development: Theory and practice. New York: Harcourt, Brace, & World, 1962.
- Thomas, O. Transformational grammar and the teacher of English. New York: Holt, Rinehart, & Winston, 1965.
- Travers, R. M. An introduction to educational research. New York: Macmillan, 1958.
- Templin, M. C. Certain language skills in children. Minneapolis: University of Minnesota Press, 1957.
- Traxler, A., & Anderson, H. A. The reliability of an essay test in English, School Review, 1935, 43, 534-539.
- Vigotsky, L. S., Thought and language. Cambridge: Massachusetts Institute of Technology Press, 1962.
- Watts, A. F. The language and mental development of children. London: George C. Harrap, 1944.
- Weiss, B. J. (Director). Language, linguistics, and school programs. Proceedings of the Spring Institutes, Champaign, Ill.: National Council of Teachers of English, 1963.
- Wilson, G. C. The structure of English. In G. W. Ford & L. Pugno, (Ed.), The structure of knowledge and the curriculum. Chicago: Rand McNally, 1964. Pp. 71-86.

Winer, B. J. Statistical principles in experimental design. New York: McGraw-Hill, 1962.

Yates, A. Review. In O. K. Buros (Ed.), Fifth mental measurements yearbook. Highland Park, N. Y.: Gryphon Press, 1959. Pp. 499-500.

APPENDIX A.

THE CURRICULUM UNITS

Unit OneSubstitution of NounsPeriod 1.

Inductive Development of Generalization: Nouns may be replaced by a variety of other nouns.

The first period should be completely oral. The teacher could begin by presenting the verb "roar," asking the pupils what kind of animals or things roar.

Eg. Engines roar

Lions roar

Jets roar

Fires roar

Thunder roars

etc.

Encourage the children to supply as many suitable subjects as possible. It is important at this level to develop fluency.

When a reasonable number of words have been suggested, present the following predicates one at a time, asking the pupils to find as many suitable subjects as they can.

(The boys, a cat, etc.) - chased the squirrels.

- blew out the candles.

- sank to the bottom of the lake.

- forgot his tools.

The teacher might then present a few simple sentences

asking the pupils to suggest substitutes for the nouns underlined.

N.B. These need not be synonyms.

1. The car raced down the road.
2. The boy caught the ball.
3. "Wear your coat," Mother said.
4. Grandpa slept on the couch.

Conclude the lesson by asking the pupils what they have learned about varying the nouns in their sentences.

Period 2.Deductive Application.

The second period should also be completely oral and will be, essentially, a continuation of the procedures used in the first period.

Recall the first period and what was learned.

Use the sentences listed below in the same manner in which sentences were used in the first period. Pupils will first think of a number of possible situations for the underlined nouns and, then, insert these into the original sentences. In the last sentence, the pupils will also identify all the nouns for which substitutions may be made.

1. Tom collects rocks.
2. We travelled by train.
3. The lamp stood in the corner.
4. The steak smelled good.
5. "Take your feet off the table," she said.
6. Helen slipped on the ice.
7. The hunter scared the rabbit.

If there is time, have the pupils offer their own sentences and follow the above procedure for replacing the nouns.

Encourage the pupils to discuss their sentences.

Period 3.Written Exercises.

The pupils should write each of the following sentences three times, substituting each time a different word for the underlined nouns. In the last sentence, the pupils must identify the nouns for which substitutions could be made.

Do the first sentence together, showing, as demonstrated in previous lessons, how many different words could be used.

1. The jeep cut across the field.
The fox cut across the field.
The scouts cut across the field.
The spy cut across the field.
The farmer cut across the field.
Etc.
2. The band played for an hour.
3. The dog was chewing a bone.
4. The girl threw a book at the boy.
5. The cat climbed the tree.

If there is time, have the pupils write as many words as they can think of that can be used with the following verbs: grow; creep; rattle.

Eg. Flowers grow; potatoes grow; boys grow.

Encourage the pupils to discuss their sentences.

Unit TwoMaking Nouns More SpecificPeriod 1.

Inductive Development of Generalization: Sentences can be improved by substituting more specific nouns (i.e. the best words you can think of).

The first period should be completely oral. The teacher might begin by presenting a simple sentence, asking the pupils to think of all the possible words they could use in place of the word (noun) underlined. Encourage them to think of words that are similar to the noun.

Eg. The animal was given to the zoo.

lion

tiger

zebra

monkey

baboon

bear

etc.

Discuss any unsuitable suggestion such as chicken, dog, etc. When a reasonable number of words have been suggested, the pupils could, then, think of appropriate replacements for nouns in the following sentences. In the last sentence the pupils will also identify the nouns for which substitutions may be made.

Compound nouns may be accepted as replacements.

1. The bird hopped from branch to branch.
2. The baby tried to put the toy in her mouth.
3. Alice found herself alone in the room.
4. Jack put the bug in a jar.
5. A noise shattered the stillness of the night.
6. With a flip of its tail, the fish was gone.
7. "Go to the store and buy me some meat," she said.
8. The men climbed aboard the airplane.

The lesson might be concluded by asking the pupils what they have learned about how they could improve their sentences. Elicit the idea that we must always think of the best words possible to use in sentences (i.e. most precise).

In addition to the above examples or to replace some of them, the teacher could have pupils suggest sentences for which substitution of nouns could be made.

Period 2.Deductive Application.

The second period should also be completely oral and will be, essentially, a continuation of the procedures used in the first period.

Recall the first period and what was learned.

Use the sentences listed below in the same manner in which sentences were used in the first period. Pupils will first think of a number of possible substitutions and, then, insert these into the original sentences. In the last two sentences the pupils will also identify words for which the substitutions may be made.

1. The men landed on an island.
2. The storm came without warning.
3. Suddenly, the animal sprang from the tree.
4. The car raced down the road.
5. The man built a house.
6. The bird swooped low over the building.
7. After the fight, the men were tired.
8. The woman served the meal quickly.

Encourage the pupils to discuss their sentences.

Period 3.Written Exercises.

The pupils should write the following sentences substituting the best word they can think of for the nouns. In the first five sentences, the nouns are underlined. In the last three sentences, the pupils must identify the nouns for which substitutions should be made.

Do the first sentence together, showing, as demonstrated in previous lessons, how many different words could be used. If there is time, pupils may rewrite each sentence more than once.

1. "Put the box in the room," she said.
"Put the crate in the attic," she said.
"Put the trunk in the hall," she said.
"Put the package in the kitchen," she said.
"Put the case in the basement," she said.
2. The man leaped on his horse and rode away.
3. The people roared when the player caught the ball.
4. The dogs followed the man into the woods.
5. After an hour the men were rescued by a boat.
6. "Stop that noise," the woman said angrily.
7. "Have you seen my book?" the girl asked.
8. My shoe fell into the water.

Unit ThreeExpansion of NounsFluency of ModificationPeriod 1.

Inductive Development of Generalizations: Nouns can be made more specific by modifying them with single words and word groups. Single-word modifiers are placed before the noun and word-group modifiers after the noun.

The first period should, again, be completely oral.

The teacher might begin with one of the sentences developed in Unit One.

Eg. The men landed on an island.

Remind the pupils first to think of the best word to substitute for "men."

Eg. The sailors landed on an island.

Encourage the pupils to tell more about the sailors, i.e., to add details to the picture of the sailors.

The sailors landed on an island.

brave

tired

starving

ship-wrecked

from Canada

in white uniforms

who had been lost at sea

whose ship had sunk

who had won the battle

etc.

The words and groups of words might then be inserted into the sentence, first, one at a time, and, then, a number at a time.

Eg. The starving sailors landed on an island.

The brave sailors who had won the battle landed on an island.

Repeat the above procedure using the following sentences.

1. The girl ate the cookies.

2. The man found the boy.

3. The man shot the animal.

4. The storm ruined our crops.

When the pupils have had some practice in modifying nouns, ask them what they have learned about making nouns more specific (i.e. giving a clearer picture). Develop the generalization that nouns can be made more specific by (1) substituting more precise nouns (i.e. better words) and (2) adding single words or groups of words. Encourage the generalization that single words go before the noun and groups of words go after the noun.

Period 2.Deductive Application.

The second period will be oral and will be a continuation of the procedure begun in the first period.

Remind the pupils to replace nouns with more specific words if possible.

In the case of each underlined noun, after substitution, pupils will first suggest words and word groups to tell more about the noun.

Next, pupils will insert the words and word groups into the sentences, applying the generalization developed in the first period. Allow children to try a variety of combinations.

Nouns in the last two sentences are not underlined and, thus, must be identified by the pupils before modification takes place.

1. Mother swatted the fly.
2. The noise startled the child.
3. Do you see the soldiers?
4. The man saved the boy's life.
5. "Tell us a story," the children pleaded.

Encourage the pupils to discuss their sentences.

Period 3.Written Exercises.

Explain that pupils are to list on scrap paper as many details as they can think of about the underlined noun in each sentence.

Have them write each sentence two or three times using various combinations of modifiers.

If the nouns may be made more specific before modification takes place, pupils should be encouraged to make substitutions.

In the case of the last sentence, the nouns must be identified before the pupils think of modifiers.

Do the first sentence together.

1. The chair belongs to my grandmother.
2. "So, you broke the window!" he exclaimed.
3. The workman climbed the ladder and finished the job.
4. I have money to buy tickets.
5. The men discovered an island.

Unit FourSingle-Word ModifiersPart 1 - AdjectivesPeriod 1.

Inductive Development of Generalization: Many single-word modifiers may be used to make nouns more specific.

The first period should, again, be completely oral. The teacher might begin by showing the pupils a large colorful picture illustrating some action. The teacher could then proceed as follows:

Ask the pupils what is happening in the picture.

Eg. The man is driving a car.

Suggest that the pupils substitute more specific nouns if possible.

Eg. doctor sedan

Ask the pupils to look carefully at the picture for details and suggest words (i.e. single words) that tell more about the nouns they have used.

Eg.	<u>doctor</u>	<u>sedan</u>
	thin	large
	grey-haired	blue
	pleasant	shiny
	old	new
	etc.	etc.

One word to describe each noun could be inserted into the

sentence. The pupils could, then, experiment with two or three modifiers for one or both nouns, varying the combinations.

N.B. The pupils should be allowed to order multiple modifiers intuitively.

The above procedure should be repeated using the following sentences.

1. The dog shivered in the rain.
2. The bear snarled at the man.
3. The men sat on a bench.
4. The clown was riding a bicycle.
5. The runner asked for a drink of water.
6. When the whistle blew, the workmen put their tools away.

Encourage the pupils to discuss their sentences. Develop the generalization that many (or more than one) noun modifiers may give a clearer picture of what they want to say. Another generalization might concern the usual order of multiple single-word modifiers.

Part 1Period 2.Deductive Application.

The second period could include both oral and written application of the generalization developed in the first period and will, in part, be a continuation of the procedures used therein.

Oral:

For the following sentences:

Remind pupils to substitute more specific nouns, if possible.

Ask pupils to suggest single-word modifiers.

The pupils will then insert one, two, or three modifiers before each noun in the sentences. Allow them to try various combinations. They may decide that a particular noun does not need a modifier.

1. Mike sank his teeth into the fruit.
2. She offered the man a bowl of soup.
3. The witch pointed her finger at the girl.
4. The boat pitched and tossed on the water.

Discuss the sentences.

Written exercise:

Show the pupils a large colorful picture of a bird, an animal, or a tree. Have the pupils write a sentence describing

the animal or object. When they have written their sentences, show the pupils the pictures again, asking them if they have included the most important details in their descriptions and used the best words they could think of. Have them rewrite their sentences, making substitutions and additions. If time permits, let the children read their sentences to the class.

Part 2 - Other Single-Word Modifiers

Period 3.

Inductive Development of Generalization: Sometimes nouns may be made more specific by adding words that give an idea of the number or the amount.

This period should be completely oral. The teacher might begin by showing the pupils a large number of colored sticks (or blocks).

The teacher might, then, ask the pupils how many sticks were on the table.

The response could be:

"a hundred"

"about fifty"

"more than twenty-five" etc.

The teacher could then ask the pupils what word they could add to "sticks" to express an idea of the number or the amount when they didn't know the exact number or amount. By having the pupils consider the whole group of objects, and rearranging the objects into groups of different sizes and colors, try to elicit words or expressions such as:

many	most (of)	
several	some	both
a few	same	half
a little	all	three
(the) other	neither	five

more either etc.

Have the pupils use these words or expressions in sentences.

Eg. There are many sticks on the table.

All the sticks on the chair are blue.

Half the sticks are yellow.

Some of the blue sticks are on the floor. The other
blue sticks are in the box.

John gave Henry two red sticks and one green stick.

The teacher dropped a few black sticks.

The above procedure could be repeated using other objects
of different colors, sizes, and shapes in the room.

An alternative may be to show the children one or more
appropriate large colorful pictures eliciting (1) a simple
sentence, (2) noun substitutions, (3) adjectives and other
modifiers, and then having the pupils experiment with various
combinations.

The pupils should then be encouraged to discuss their
statements and express an appropriate generalization.

Part 2Period 4.Deductive Application.

The fourth period could include both oral and written application of the generalization developed in the third period and will, in part, be a continuation of the procedures used therein.

The teacher might begin by recalling the last three periods.

Oral:

For the following sentences, ask the pupils to make the nouns more specific by substituting the best words they can think of and inserting single-word modifiers before the noun. Suggest that the pupils try various combinations.

1. The children drew pictures of birds.
2. The man was caught stealing watches and rings.
3. The bus took us over bridges and past parks.

Written:

Suggest that the pupils pretend they are listening to three fishermen boasting about the fish they caught last summer. Have the pupils write a sentence that they think each man would say, describing the number, kind, and size of fish caught.

Develop the idea that the men would probably try to outdo one another in describing their catch. Thus each successive sentence should describe the fish as being bigger, better, and more numerous.

Unit FiveWord-Group ModifiersPeriod 1.

Inductive Development of Generalizations: Nouns may be made more specific by adding word-group modifiers. They should be placed after the noun. They should be placed as close as possible to the noun they modify.

The first period should be completely oral. The teacher might begin by recalling Unit Three. She could then present a sentence.

Eg. Up in the attic, the boys found a trunk.

Encourage the pupils to supply all the details they can think of to complete the picture of the trunk. Suggest that they offer single words and word groups.

Eg. old, large, square, wooden, dusty, torn, small, brown,
painted.

with a broken lock, without a handle, covered with
dust, that was filled with toys, that wouldn't open,
with nothing in it, under a cover, that belonged to
their grandmother, with a leather handle.

Write on the chalkboard, in two columns, single-word modifiers and word-group modifiers. Suggest to the pupils that in this lesson they will experiment mainly with word-group modifiers but do not discourage the use of single-word modifiers.

For a start, suggest that the pupils insert one or two single-word modifiers and then try various word-group modifiers one at a time. Then encourage them to experiment with two word group modifiers.

Eg. Up in the attic, the boys found an old wooden trunk with a broken lock.

Up in the attic, the boys found an old wooden trunk that was filled with toys.

Up in the attic, the boys found an old wooden trunk that belonged to their grandmother covered with dust.

Up in the attic, the boys found an old wooden trunk with a broken lock covered with dust.

Etc.

Discuss the sentence after a reasonable number of combinations have been tried. Should an expanded sentence contain misplaced modifiers, the teacher might ask the children whether the sentence really means what they want it to mean.

Repeat the above procedure with the following sentences.

1. The boy delivers newspapers.
2. The cake looked delicious.
3. The monkeys chattered noisily.
4. One monkey ate all the popcorn.

After discussing these sentences, review the generalizations that (1) word-group modifiers give a better picture of what they want to express (i.e. make nouns more specific) and (2) they go after the noun. Develop the generalization that

these modifiers must be as close to the noun as possible.

Period 2.

Deductive Application.

This period will begin with oral discussion and practice and will lead to written practice.

The teacher might suggest the following. Suppose that you have a pen-pal coming to visit you next month from another country. You have never seen each other and your friend has no recent picture of you. You intend to meet him (or her) at the airport and you are planning to write a letter describing yourself, etc. This description might include what you look like and what you will be wearing. Your description should be so accurate that your friend will recognize you immediately.

Ask the pupils to suggest some of the things they should include in the description.

Eg. 1. size, height, color of hair, eyes, etc.

2. details of jacket, coat, hat, etc.

3. other special features such as what you are carrying, who will be with you.

For practice suggest that the pupils begin with a sentence describing what they will wear.

Eg. I will be wearing a brown jacket.

Elicit other possible details.

Eg. dark, short.

with a hood
that has five brass buttons
with a zipper
etc.

Have the pupils try inserting the modifiers in the sentence. Discuss selection of modifiers.

Written:

This need not be in the form of a letter. Have the pupils begin to write their descriptions. Suggest that they write at least five sentences beginning with a personal description. They might start by making a list of details they think are important.

After the pupils have written their descriptions, ask them to recall what they have learned in the last five units (using the best nouns they can think of, including all the important details, and using a variety of noun modifiers to make their descriptions clear).

The pupils should then rewrite their descriptions making the necessary improvements.

Period 3.

Inductive Development of Generalization: Sometimes it is possible to combine two or more sentences. Some of the sentences may be reduced to single words or smaller groups of words.

This period should be completely oral. The teacher might begin by reviewing, briefly, the ideas taught the previous lessons. This could be done using the following procedure.

1. Select a simple sentence.

Eg. The man scolded the boys.

2. Make the nouns more specific if possible.

3. Expand the nouns.

Eg. The angry farmer scolded the three rough boys who had broken his fence.

The purpose of this lesson is to combine short sentences, subordinating one or more of the clauses and reducing the subordinate clauses to phrases or single words if possible.

Pablo is a boy.

He is poor.

He has no shoes.

Ask the pupils to suggest ways of combining the first two sentences.

Eg. Pablo is a boy and he is poor.

Pablo is a boy who is poor.

Pablo is a poor boy.

The third combination may or may not be suggested. If

not, develop the idea that a clause may often be reduced.

Encourage the children to combine the last pattern with all the previously combined patterns.

Eg. Pablo is a boy and he is poor and he has no shoes.

Pablo is a boy who is poor and he has no shoes.

Pablo is a poor boy who has no shoes.

Use the same procedure in combining the following sentences.

1. Put the flowers on the table.

Eg. Put the roses on the table.

The table is low.

The table is beside the window.

Put the roses on the low table beside the window.

2. The woman waved to the crowd.

She was smiling.

She was riding in a carriage.

3. The boys finally found the house.

It belonged to the hermit.

It was in the woods.

4. The hermit didn't notice the boys.

He was old.

He was chopping wood.

The boys were watching him.

Encourage the pupils to discuss their sentences. Ask them which combinations are best. Develop the generalization that often sentences can be combined and it is often better to

reduce the number of words in some sentences when combining them.

Period 4.

Deductive Application.

This period will include both oral and written application of the concept developed in Period 3. The procedure will be similar.

Ask the pupils to recall what they learned in the previous period about combining sentences.

Oral:

Have the pupils combine the following patterns.

1. There was a dwarf.

He was tiny.

He was guarding the treasure.

2. Along came a man.

He was young.

He was riding a horse.

The horse was black.

3. "Have you seen a box?" the man asked the dwarf.

The box is large.

The box has brass handles.

The dwarf was frightened.

Written:

Have the pupils rewrite this short paragraph combining some of the sentences.

Tom stepped into the room. It was dim and it was smoky.

The walls were covered with pictures. The pictures had heavy, black frames. On the floor there was a carpet. It was ragged. It was faded. Then he saw the man. The man was old. He was sitting in a chair. It was in the corner of the room.

Written Application

Period 1.

The teacher could begin by having the pupils draw and color a picture of a clown doing a funny act. Ask the pupils to write their names on the back of their drawing paper only.

On a separate piece of paper have the pupils write a description of their own clown. Tell them that this is for a "guessing" game. Each pupil will be required to read his description and the class will try to identify the matching drawing during the next period. Thus, they must examine their own drawing carefully and write the best description they can, including all the essential details.

After they have written the first draft of their compositions, remind the pupils of what they have learned in the last five units and have them rewrite their descriptions, making the necessary improvements.

Period 2.

This period will be a continuation of the first period.

The teacher should display the drawings done in the previous period. Each pupil will read his (her) composition and the class will attempt to identify the drawing it describes.

If some of the descriptions are vague and could apply

to a number of drawings, have the pupils rewrite their descriptions adding a sufficient number of details. If time permits have the improved descriptions re-read.

Period 3.

The teacher could begin with an oral discussion: Suppose that you had taken your little brother (sister) to the exhibition and lost him temporarily. You are worried that you might not find him before the gates close. How would you describe him to the policeman nearby? Remember that there are many other children at the fair. You would have to describe him so well that the policeman could pick him out right away. What details would you tell the officer?

After the pupils have discussed the assignment, have them write their descriptions.

If there is time, have the pupils rewrite their descriptions, reminding them of what they have learned in the previous units.

APPENDIX B.

INSTRUCTIONS TO TEACHERS FOR ADMINISTERING PRETEST AND POSTTEST COMPOSITIONS

Writing Tests

The pretest and posttest compositions will each use one period of forty minutes. There is, however, no strict time limit. Within reason, all pupils should finish.

In all compositions the emphasis will be away from mechanics, that is, spelling, handwriting, et cetera. Pupils should concentrate on what is said and how it is said. They should not be helped in any way during the writing of compositions. Compositions will not be rewritten. Pupils should be given time to read their completed compositions and make changes for improvement.

Oral Discussion: (10 minutes) Oral discussion of topic to develop fluency of ideas. Brief discussion of how pupils might make their descriptions clear and vivid.

Writing: (20 minutes) Compositions should be written on foolscap in pencil. Name, grade, and school of pupil should be at the top of each paper.

Revision: (10 minutes) Pupils should be encouraged to think of how they can make their descriptions more interesting. They should then read their descriptions and make the changes necessary for improvement.

Writing Pretest A

"Description of a Favorite TV Character"

Oral Discussion: (10 minutes) Discuss the following questions with pupils.

Who is your favorite TV character?

Why do you like him (her)?

What does he (she) look like?

What are some things he (she) does in the show?

How would you describe him (her) for someone who has never seen the show?

Include a brief discussion of how to make the descriptions clear and vivid.

Writing: (20 minutes) Compositions should be written on foolscap in pencil. Name, grade, and school should be at the top of each paper.

Say, "Describe your favorite TV character for someone who has never seen him (her)."

Revision: (10 minutes) Remind pupils to think of ways to improve their descriptions. Pupils will then read their compositions and make the changes necessary for improvement.

N.B. Please remind pupils to write their names, grade and school at the top of the paper.

Writing Pretest B

"Christmas at Our House"

Oral Discussion: (10 minutes) Discuss the following questions with pupils.

How do you celebrate Christmas at your house?

What does your house look and sound like at Christmas?

What are some things you enjoy most about Christmas at your house?

How would you describe it for someone who hasn't been at your house at Christmas?

Include a brief discussion of how to make the description clear and vivid.

Writing: (20 minutes) Compositions should be written on foolscap in pencil. Name, grade, and school should be at the top of each paper.

Say, "Describe Christmas at your house for someone who has never been at your house at Christmas."

Revision: (10 minutes) Remind pupils to think of ways to improve their descriptions. Pupils will then read their compositions and make the changes necessary for improvement.

N.B. Please remind pupils to write their names, grade, and school at the top of the paper.

Writing Posttest A"Description of a Favorite Real Person"

Oral Discussion: (10 minutes) Discuss the following questions with pupils.

Who is the person you like most to be with?

Why do you like him (her)?

What does he (she) look like?

What are some things you enjoy doing together?

How would you describe him (her) for someone who has never met your favorite person?

Include a brief discussion of how to make the description clear and vivid.

Writing: (20 minutes) Compositions should be written on foolscap in pencil. Name, grade, and school should be at the top of each paper.

Say, "Describe your favorite real person for someone who has never met him (her)."

Revision: (10 minutes) Remind pupils to think of what they have learned to improve their descriptions. Pupils will then read their compositions and make the changes necessary for improvement.

N.B. Please remind pupils to write their names, grade, and school at the top of the paper.

Writing Posttest B"Description of a Favorite Place"

Oral Discussion: (10 minutes) Discuss the following questions with pupils.

Where is the nicest place you know?

What does it look like?

Why do you like it?

What do you do there?

How would you describe it for someone who had never been there?

Include a brief discussion of how to make the description clear and vivid.

Writing: (20 minutes) Compositions should be written on foolscap in pencil. Name, grade, and school should be at the top of each paper.

Say "Describe your favorite place for someone who has never been there."

Revision: (10 minutes) Remind pupils to think of what they have learned to improve their descriptions. Pupils will then read their compositions and make the changes necessary for improvement.

N.B. Please remind pupils to write their names, grade, and school at the top of the paper.

APPENDIX C.

LETTERS TO PRINCIPALS AND TEACHERS

Department of Elementary Education
The University of Alberta
Edmonton, Alberta

March 28, 1968

Principal's Name
School Name
Address
City

Dear :

The Edmonton Separate School Board has granted me permission to conduct a thesis research project in several elementary schools. Your school was suggested as a possible participant.

The project consists of the teaching of language units which I have designed for the improvement of oral and written language of fourth-grade pupils. These units have been carefully developed on the basis of recent research and should provide interesting and effective learning devices. The actual teaching of the units, which will extend for six weeks, can be done during the regular language periods by the fourth-grade teachers participating in the experiment. In the week preceding and the week following instruction, the children will be assigned pretest and posttest compositions. No other testing will be necessary. Permission has been granted to obtain pupils' I.Q. scores from the class teachers.

The following schedule seems most suitable:

Week of April 22, 1968	-	Pretesting
Six weeks beginning April 29, 1968	-	Instruction
Week of June 10, 1968	-	Posttesting

For this research project, two experimental sets of units have been drawn up and will be taught concurrently in several different schools. Both treatments, A and B, requiring the same amount of teaching time, will be randomly assigned to schools. The fourth-grade teachers taking part in the study will be asked to teach one set of experimental units, either A or B, and will be provided with the corresponding detailed instructional material.

The teachers will also be asked to supervise the writing of pretest and posttest compositions. They will not be required to analyze the compositions. When the study is completed each participating teacher will be given the instructional material used by both treatment groups.

I hope that you and the fourth-grade teachers on your staff will be interested in participating in this research project. Your cooperation would be most appreciated. This letter will be followed up by a telephone call in a few days.

Yours sincerely,

(Miss) Allison Sennat
Graduate Student

Department of Elementary Education
The University of Alberta
Edmonton, Alberta

June 5, 1968

Teacher's Name
School Name
Address
City

Dear :

Many thanks for your interest and cooperation in teaching my experimental language units. Without your assistance this thesis project could not have been carried out.

Enclosed you will find a self-addressed envelope and the instructions for administering posttest compositions:

- A - Tuesday, June 11
- B - Thursday, June 13

With regard to these posttests, may I ask for your continued cooperation in complying with the following requests?

1. When discussing with the pupils ways to make their stories more interesting please encourage the pupils to recall what they have learned in the past six weeks. You might have the pupils suggest one or two specific examples before they proceed with writing.

2. Will you please instruct the pupils to write on every second line of the foolscap paper. (Should a pupil forget to do this, do not have him or her rewrite the composition.)

3. Would it be possible to staple together the two compositions for each pupil and mail the complete set on Thursday, June 13, or at the latest, Friday, June 14?

Within the next two weeks you will receive a set of the material used by the other experimental group which I hope you will find interesting.

Once again, thanks for the valuable contribution that you and your pupils have made to my thesis study.

Sincerely yours,

(Miss) Allison Sennat
Graduate Student

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